On the variation
of the
energy scale 23

SPARC galaxy
rotation curves

Tue 9th Jul 2024
(Previous: Wed 2nd Jan 2019)
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Summary

This paper presents plots of the rotation curves for 64 galaxies taken from the SPARC catalogue (Lelli et al, 2016). These 64 galaxies were used for the analysis presented in paper JoKe22 (2019).

1 Table SPARC galaxies

1.1 Table of SPARC galaxies included here.

Mass   mass of galaxy in solar masses
xi slope slope of ξ-function in bottom left panels
M-to-L   mass-to-light ratio
DM   dark matter ratio

Galaxy	Mass	xi slope	M-to-L	DM
D631-7	4.95E+08	-1.68	0.20	10.1
DDO154	3.72E+08	-1.76	0.65	6.7
DDO161	2.81E+09	-1.33	0.30	3.8
DDO170	2.68E+09	-1.27	1.35	3.1
ESO079-G014	3.87E+10	-1.36	0.54	2.2
ESO116-G012	6.79E+09	-1.20	0.81	3.2
ESO563-G021	4.37E+11	-0.37	1.05	1.2
F561-1	4.07E+09	-1.32	0.39	0.4
F565-V2	2.93E+09	-1.87	2.00	3.8
F568-1	1.77E+10	-1.92	1.40	2.5
NGC0055	6.80E+09	-1.24	0.45	2.5
NGC0100	3.32E+09	-1.37	0.63	4.6
NGC0247	1.22E+10	-1.17	0.99	2.2
NGC0289	7.87E+10	-0.76	0.34	4.7
NGC0300	4.35E+09	-1.20	0.82	4.5
NGC0801	1.88E+11	-0.70	0.36	2.5
NGC0891	4.06E+10	-0.73	-0.20	3.2
NGC1003	1.27E+10	-1.16	0.41	9.9
NGC1090	7.29E+10	-0.61	0.68	1.5
NGC1705	8.08E+08	-0.98	0.99	7.8
NGC2366	1.09E+09	-1.65	0.50	2.1
NGC2403	1.23E+10	-1.02	0.45	6.1
NGC2683	4.18E+10	-0.58	0.42	3.4
NGC2841	1.67E+11	-0.74	0.50	6.7
NGC2903	3.48E+10	-0.70	0.35	4.4
NGC2915	1.57E+09	-1.30	0.99	10.1
NGC2955	1.36E+11	-0.72	0.20	2.1
NGC2998	1.24E+11	-0.80	0.50	2.3
NGC3109	1.19E+09	-1.70	2.50	4.7
NGC3198	4.73E+10	-0.84	0.61	3.8

Galaxy	Mass	xi slope	M-to-L	DM
NGC3521	3.49E+10	-0.70	0.30	4.0
NGC3726	3.68E+10	-0.99	0.31	4.7
NGC3741	3.05E+08	-1.62	0.55	13.2
NGC3769	1.39E+10	-0.95	0.28	6.9
NGC3893	2.77E+10	-0.85	0.30	3.5
NGC3917	3.66E+10	-0.53	1.17	0.8
NGC3953	8.02E+10	-0.66	0.43	1.1
NGC3972	1.17E+10	-1.25	0.57	2.1
NGC3992	1.95E+11	-0.61	0.64	2.1
NGC4010	1.05E+10	-1.53	0.39	2.5
NGC4013	3.36E+10	-0.76	0.21	5.2
NGC4051	2.62E+10	-0.89	0.30	1.5
NGC4085	1.54E+10	-0.58	0.52	0.7
NGC4088	4.63E+10	-0.75	0.28	2.3
NGC4100	4.67E+10	-0.60	0.61	1.9
NGC4138	2.08E+10	-0.65	0.40	4.3
NGC4157	5.05E+10	-0.79	0.32	3.7
NGC4183	1.84E+10	-0.77	1.00	2.4
NGC4214	1.21E+09	-0.98	0.80	6.0
NGC4559	2.11E+10	-0.94	0.39	2.3
NGC5033	5.66E+10	-0.77	0.32	6.0
NGC5055	6.10E+10	-0.73	0.25	5.2
NGC5371	2.06E+11	-0.43	0.43	1.4
NGC5585	3.53E+09	-1.49	0.27	4.8
NGC5907	1.60E+11	-0.60	0.61	2.4
NGC6195	1.31E+11	-0.75	0.20	2.9
NGC6503	9.15E+09	-0.89	0.43	6.9
NGC6674	2.14E+11	-0.65	0.82	3.6
NGC6946	3.75E+10	-0.61	0.41	2.0
NGC7331	7.81E+10	-0.78	0.20	5.1
NGC7793	4.30E+09	-1.33	0.30	2.5
NGC7814	2.91E+10	-0.71	0.50	6.2
UGC00128	4.16E+10	-0.96	1.85	3.7
UGCA442	8.23E+08	-1.74	2.00	4.7

2   Plots of SPARC galaxies

2.1   The following pages show the results of applying the analysis of JoKe22 (2019) to a large sample of galaxies from the SPARC catalogue (Lelli et al, 2016).

2.2   The top left panels shows the SPARC data. The black diamonds are the observations of the rotation curve. The purple curve is the contribution to the velocity from the central bulge (if one exists); the orange curve from the disk of stars; the green curve from the gas. The blue curve is the expected velocity given by aggregating the components using equation (8).

2.3   The top right panel shows the cumulative mass distribution corresponding to the velocities in the top left panel. The values are found by solving the numerical form of equation (5). The black diamonds give the observed total mass corresponding to the black diamonds in the top left panel. The blue line gives the normal matter mass corresponding to the blue line in the top left panel. This diagram shows whether the observed or expected masses are levelling off or are still increasing at the outer edge of the galaxy. The observed mass usually shows a continuing increase; the expected mass usually shows convergence. If the observed mass is interpreted as the expected mass plus the dark matter mass then we can define the dark matter ratio as

$$\text{Ratio(dark matter)} = \frac{M(\text{dark matter})}{M(\text{observed})} = \frac{M(\text{observed}) - M(\text{expected})}{M(\text{observed})} \qquad (11)$$

2.4   The bottom left panel shows, in logarithmic form, the ξ-function as a function of distance, as derived by solving equation (4). In practice $\xi(r)$ is found by solving equations (9) and (10). The black diamonds correspond to the observed velocities shown in the top left panel. All galaxies show an approximate linear relation. The red line is a straight line that approximates to the observed data. It turns out that it is only the slope of the red line that is important and not is position.

2.5   The bottom right panel shows the rotation curve again. The black diamonds are the same observed velocities as in the top left panel. Similarly the blue line is the same expected velocities as in the top left panel. The red line is the fitted rotation curve derived by applying the red line from the bottom left panel for $\xi(x)$ to the blue line from the top right panel for the mass $dM(x)$. The fitted velocity is calculated by applying the $\xi(x)$ and $dM(x)$ to equation (4).

D631-7
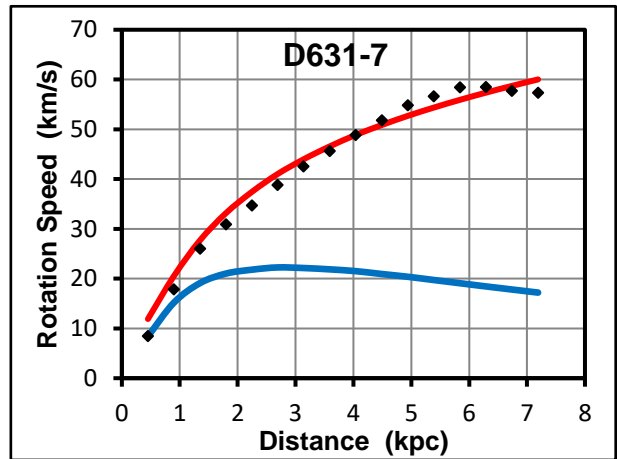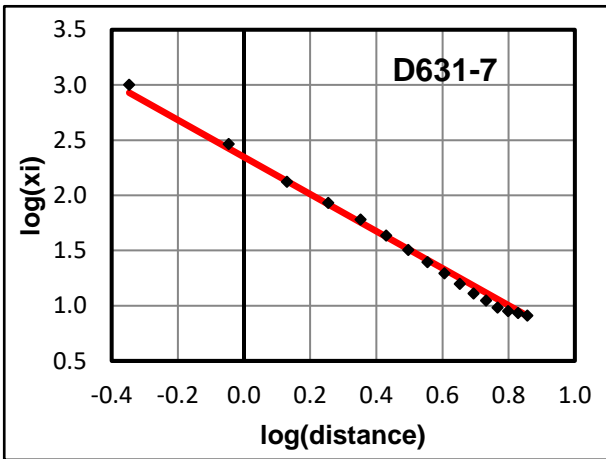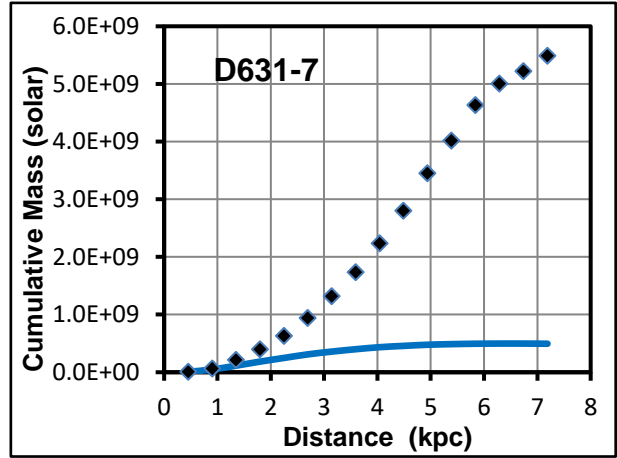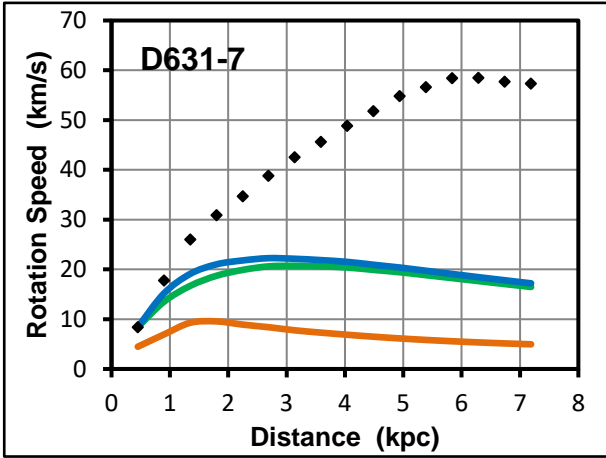
Top left: rotation curve from SPARC data
Top right: cumulative mass
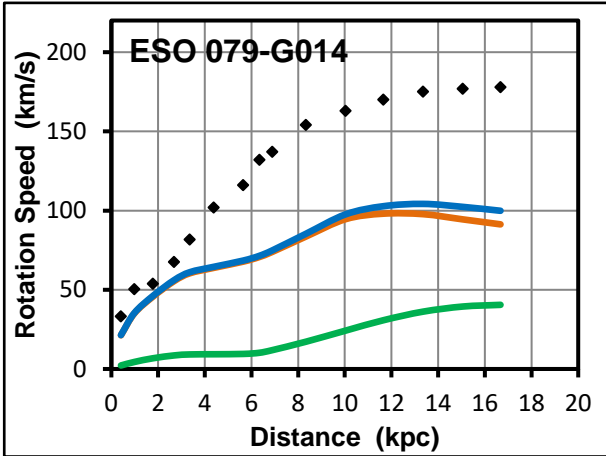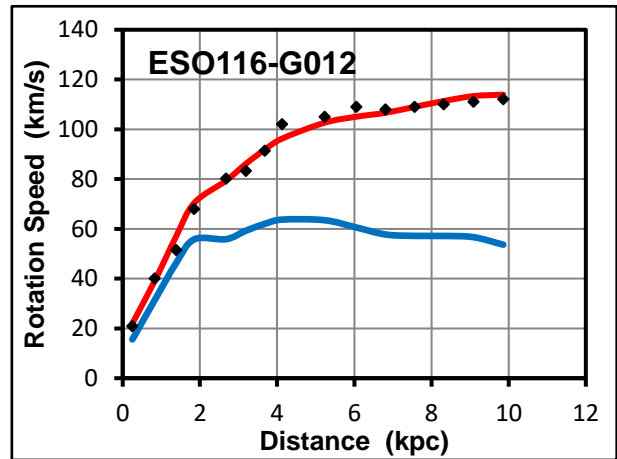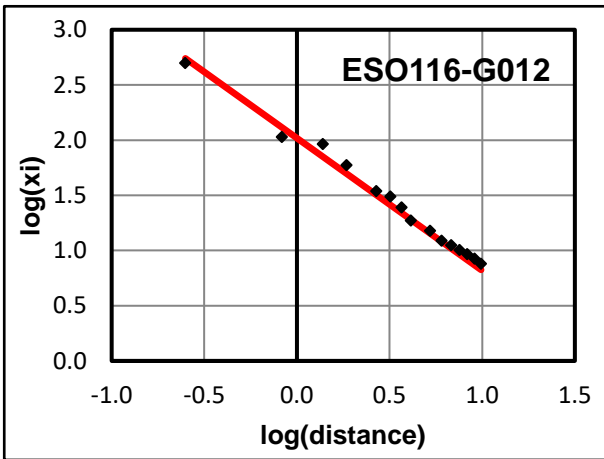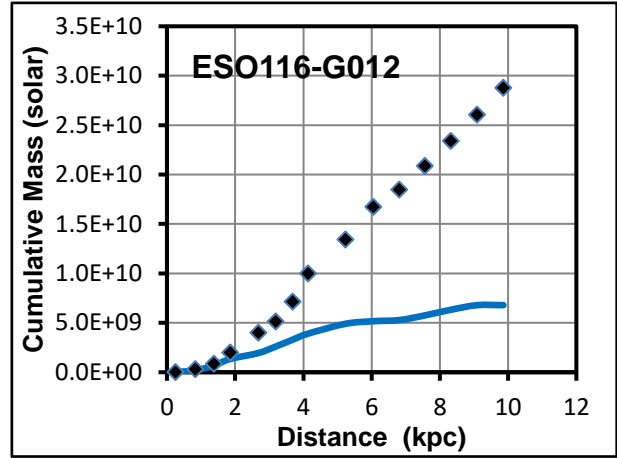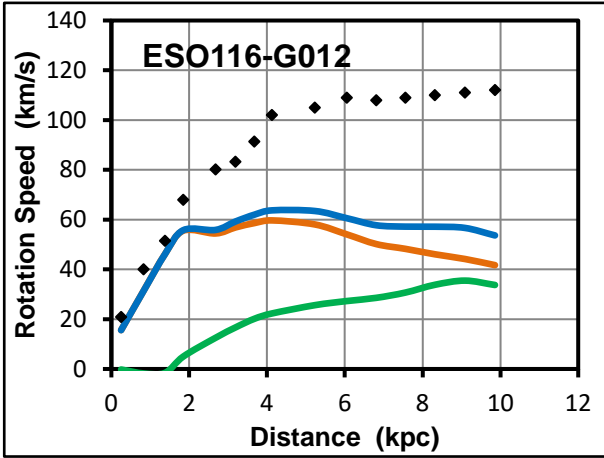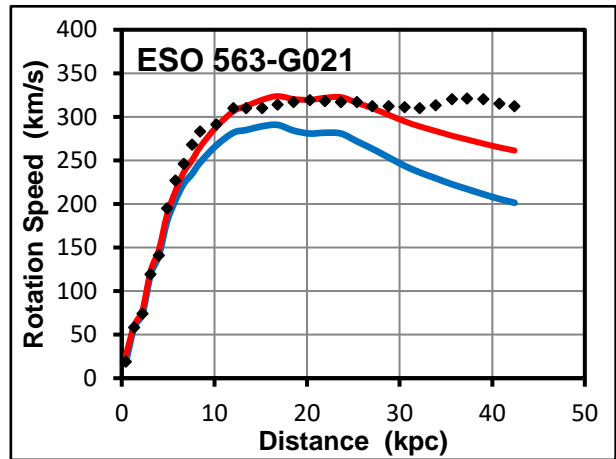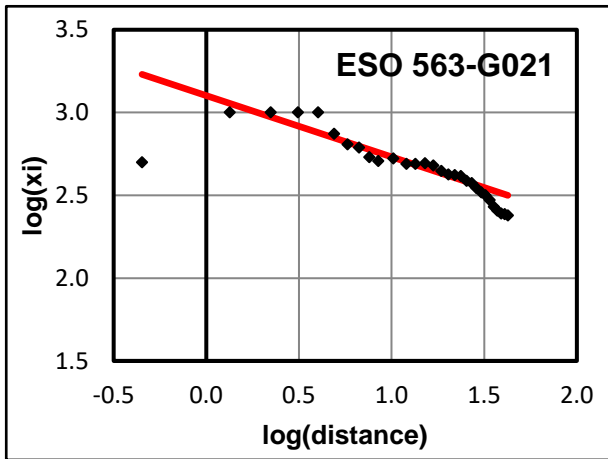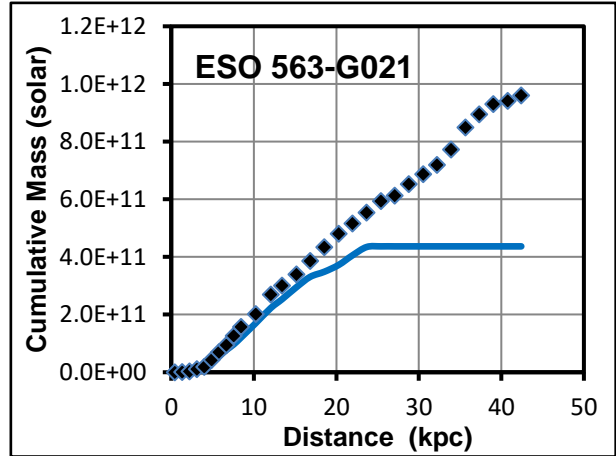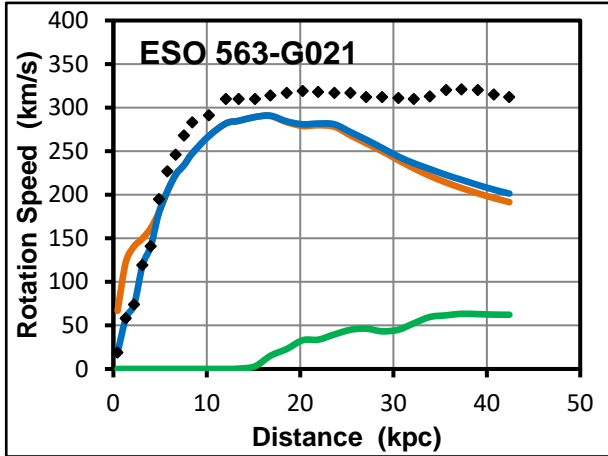Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters
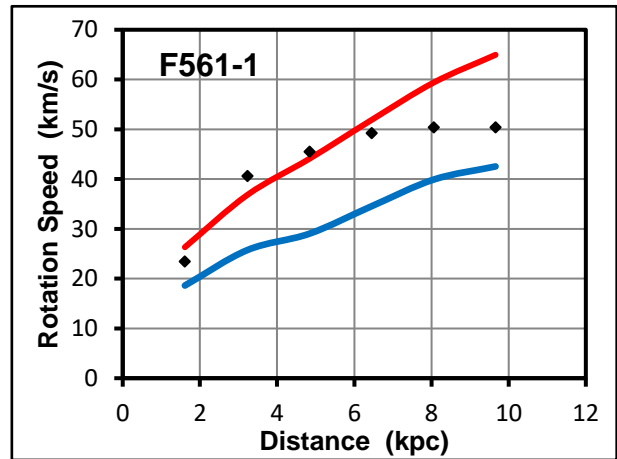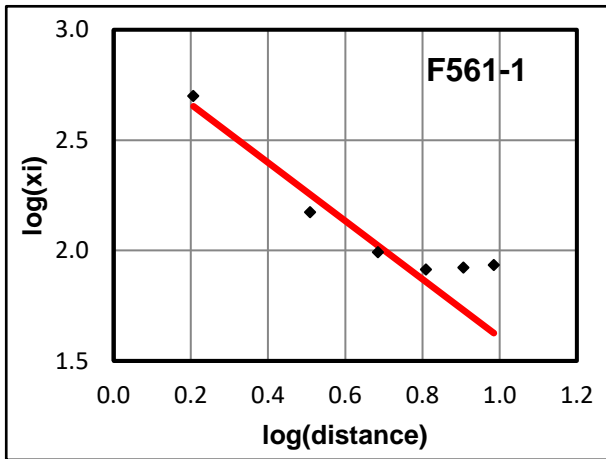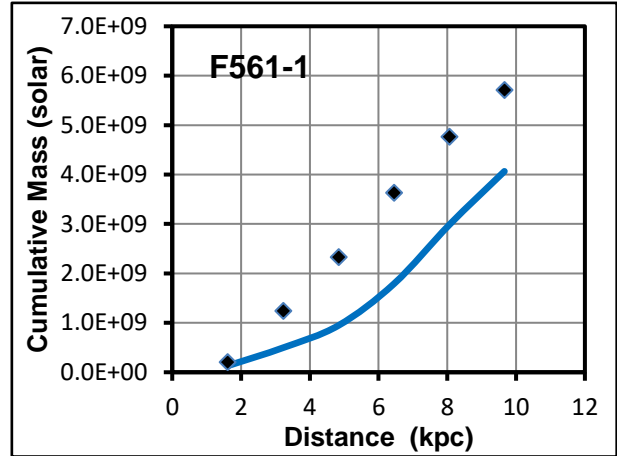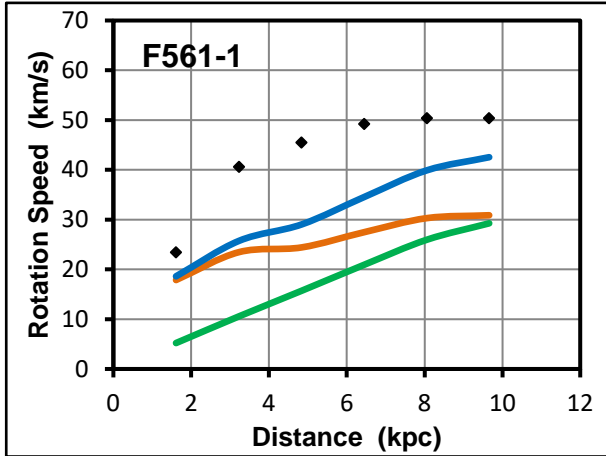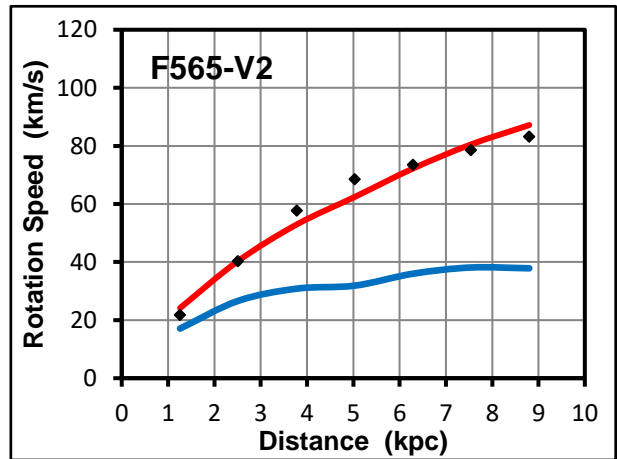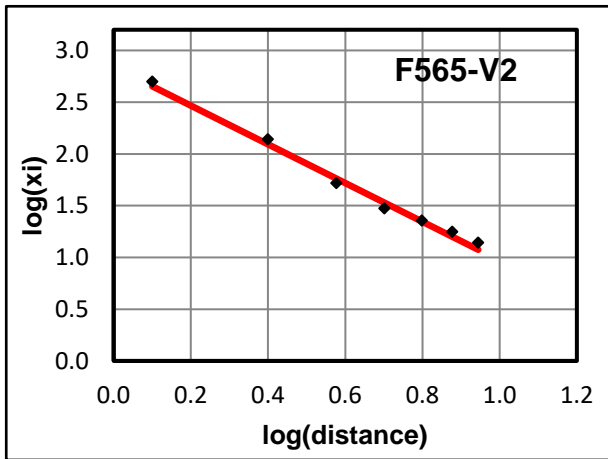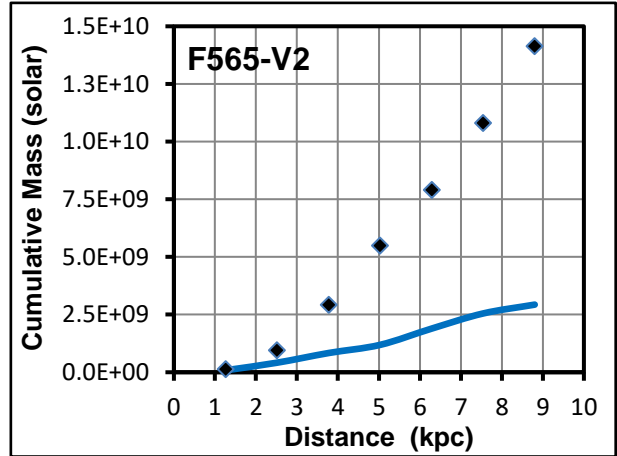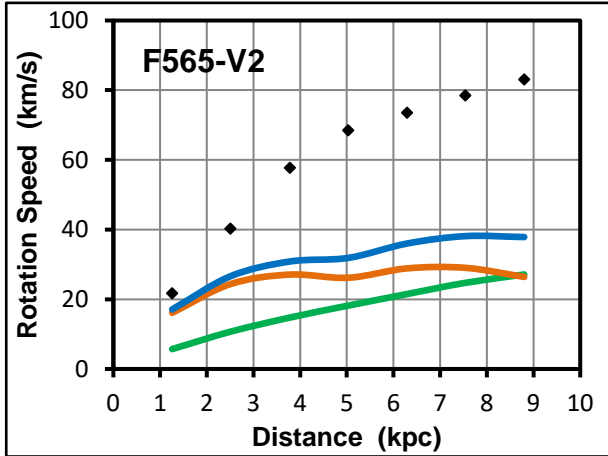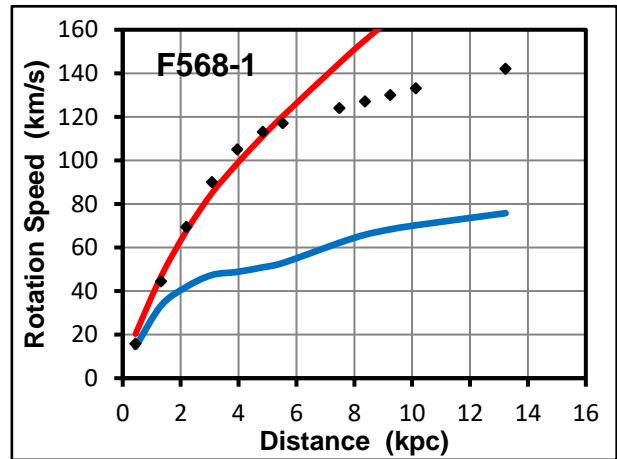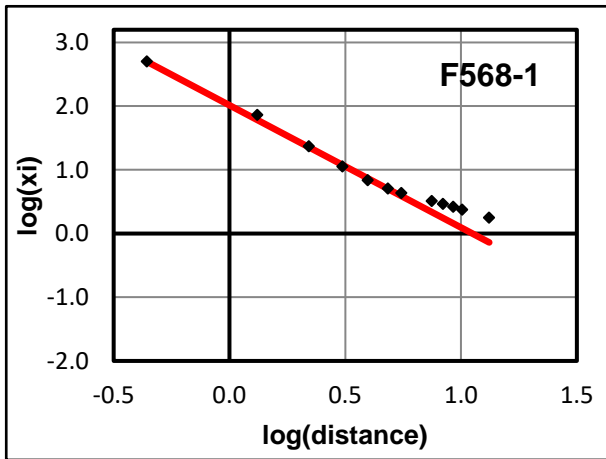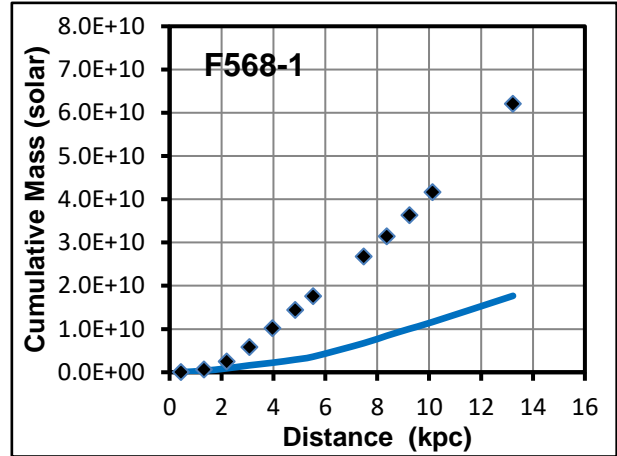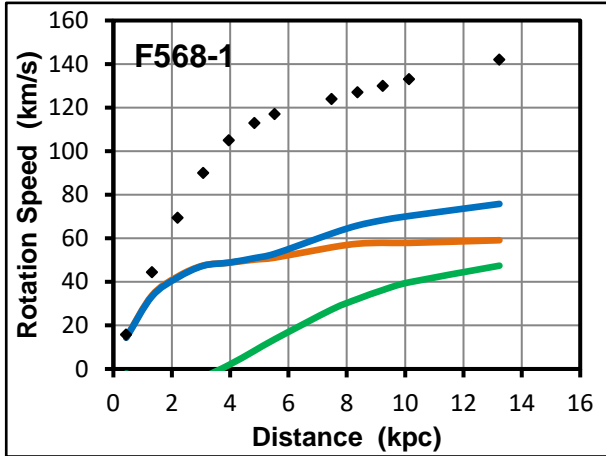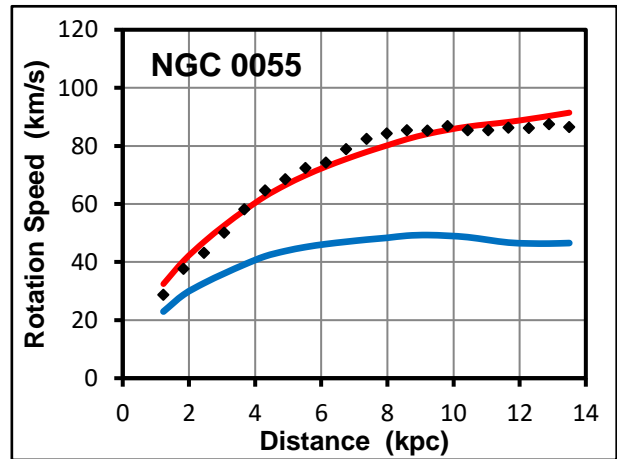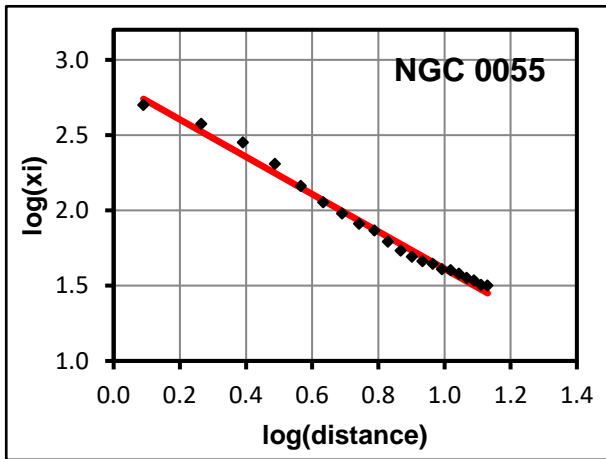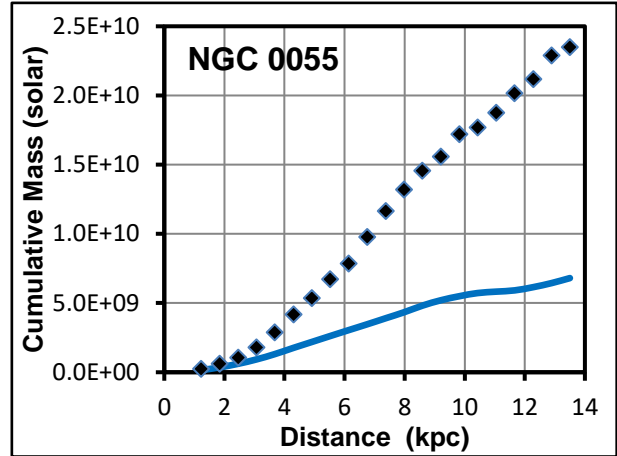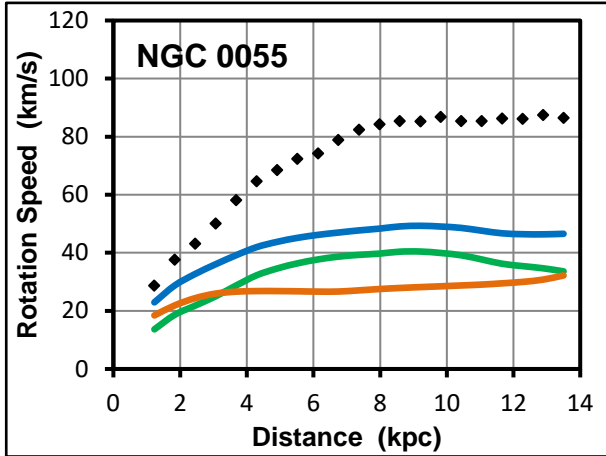
Y, M-to-L	0.20
ξ, slope	-1.68
DM factor	10.1
Fit quality	OK

Comments:

DDO 154
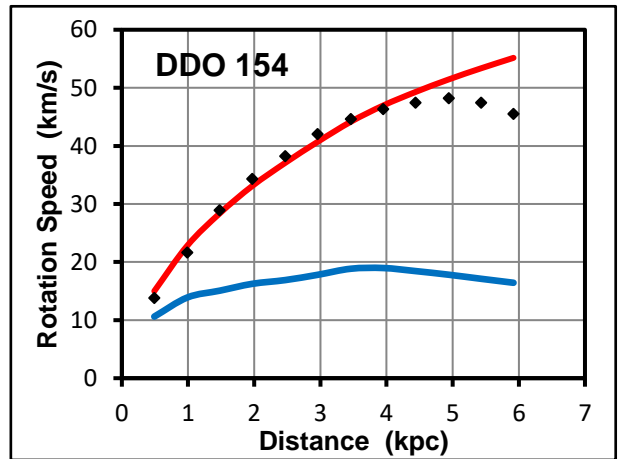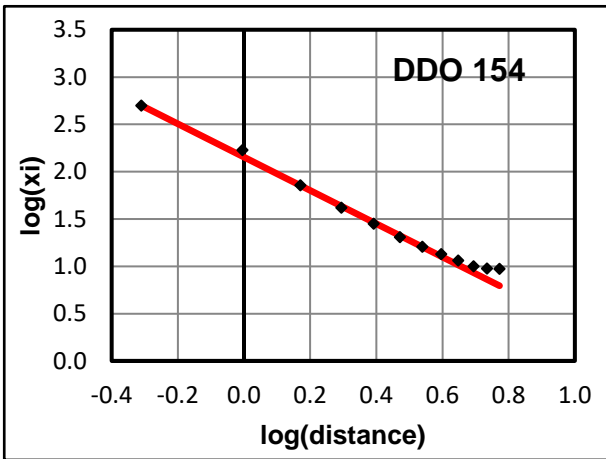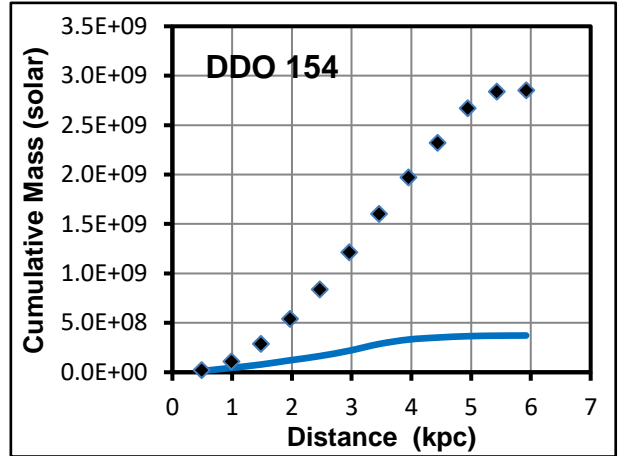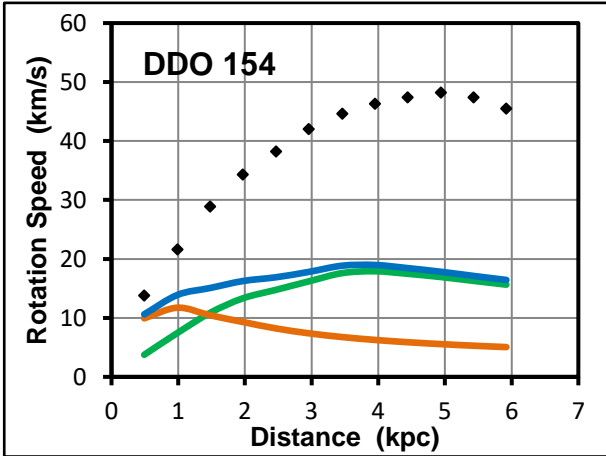
Top left: rotation curve from SPARC data
Top right: cumulative mass
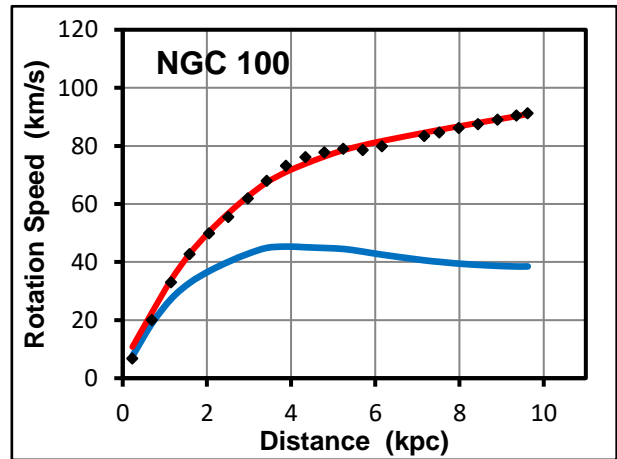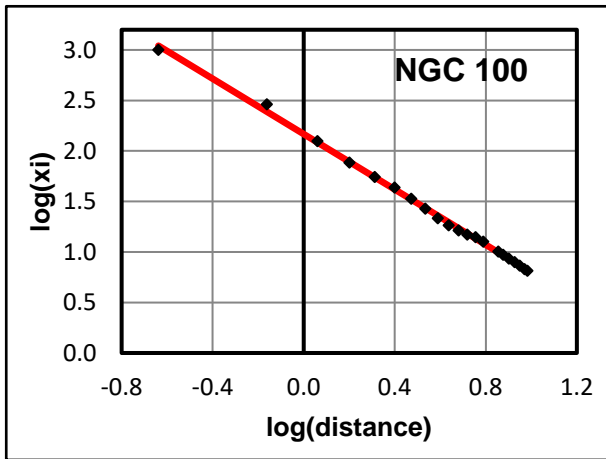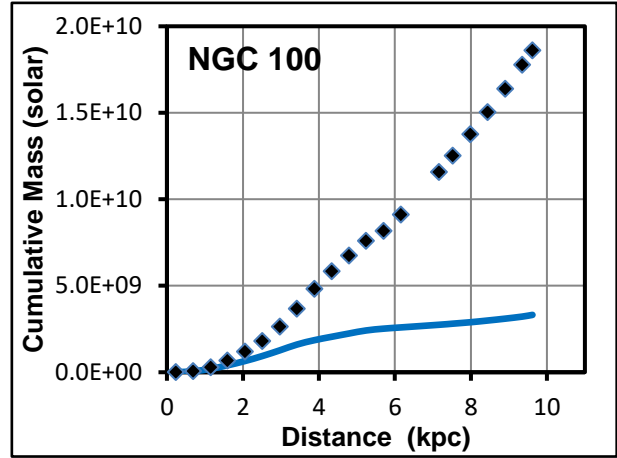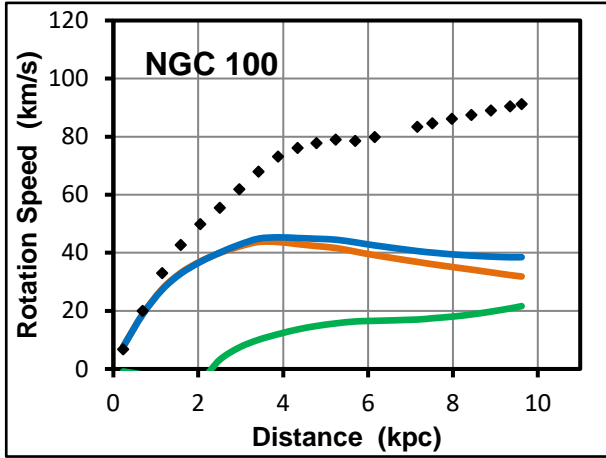Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.65
ξ, slope	-1.76
DM factor	6.7
Fit quality	OK

Comments:
Galaxy is gas dominated. Fit ignores the last 3 data points, as ξ-function is clearly levelling off.

DDO 161
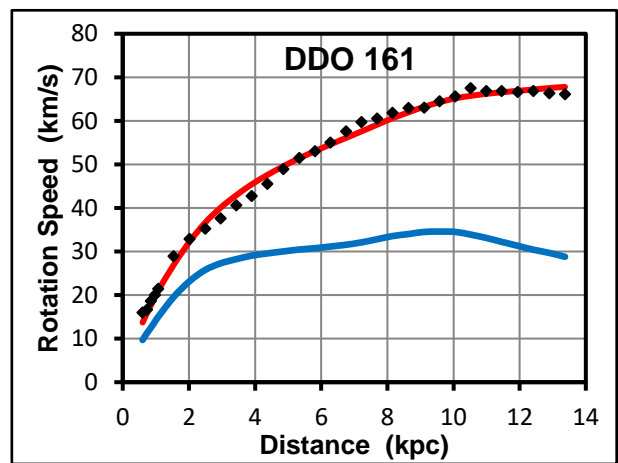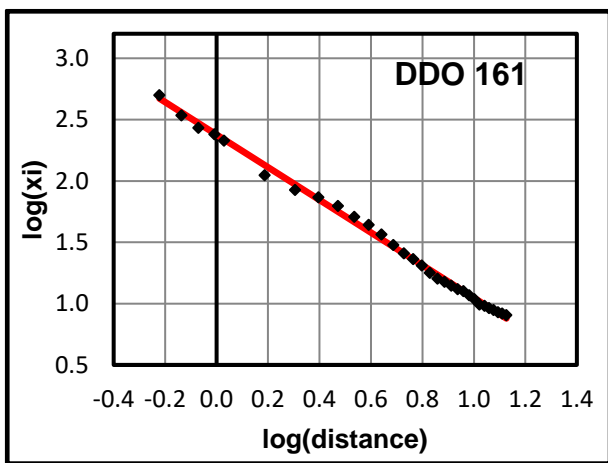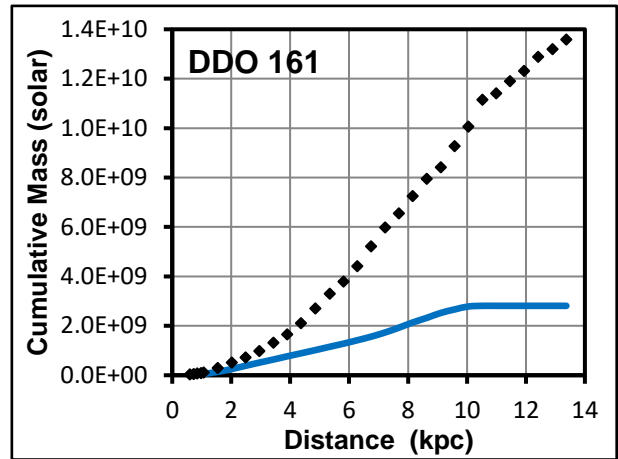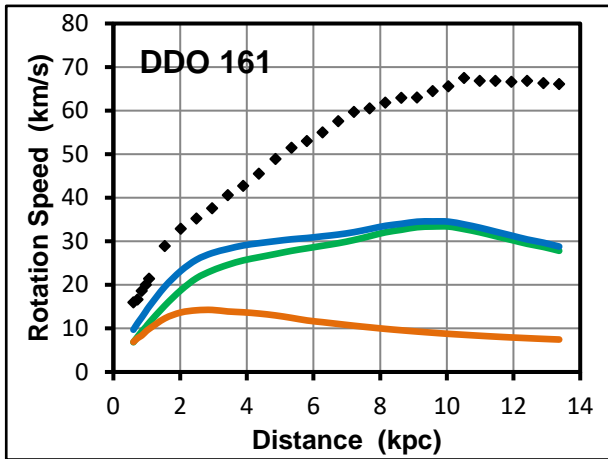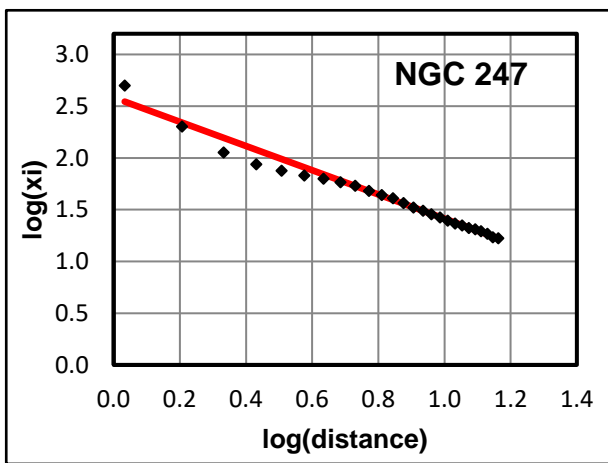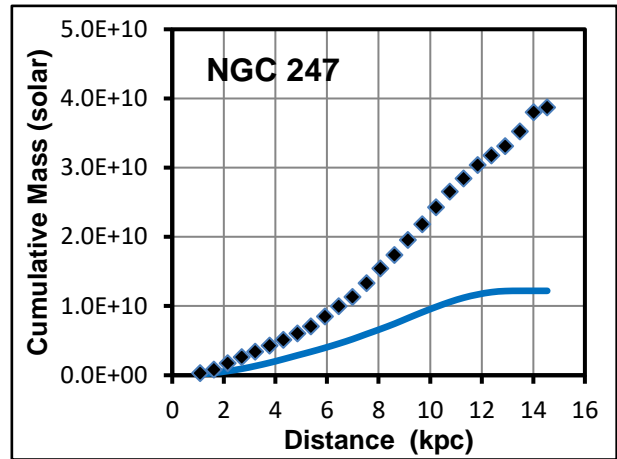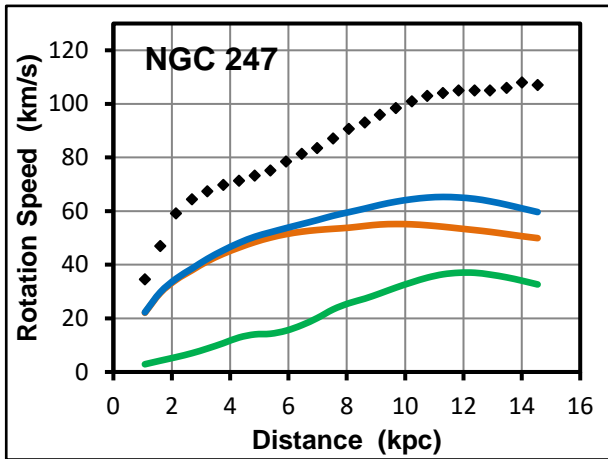

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

|	
Υ, M-to-L	0.30
ξ, slope	-1.33
DM factor	3.8
Fit quality	good

Comments:
Galaxy is gas dominated.

DDO 170
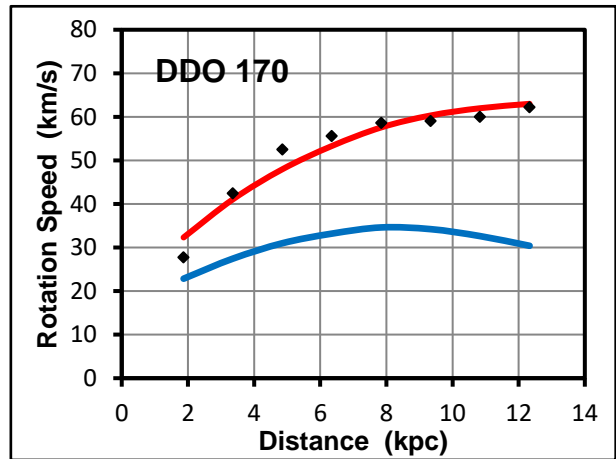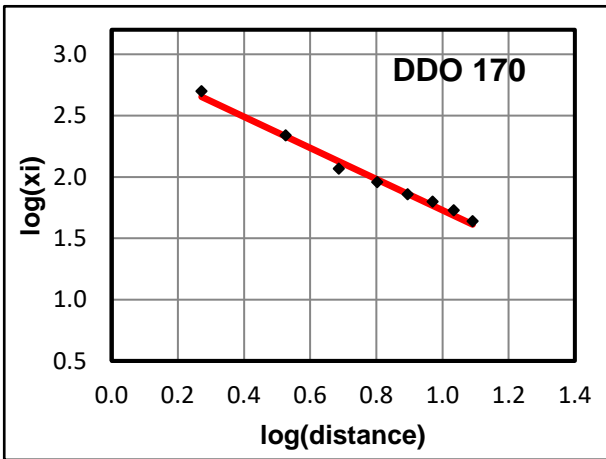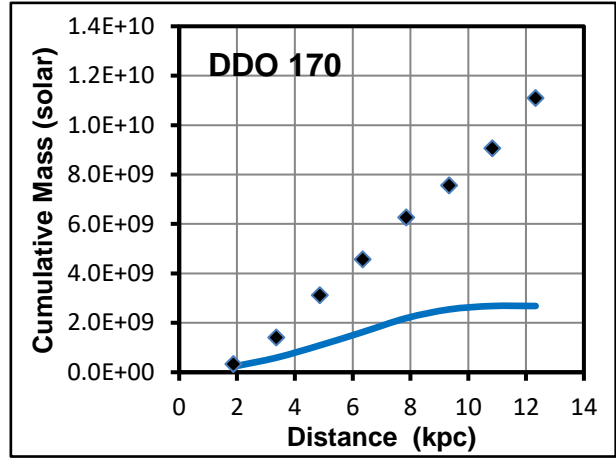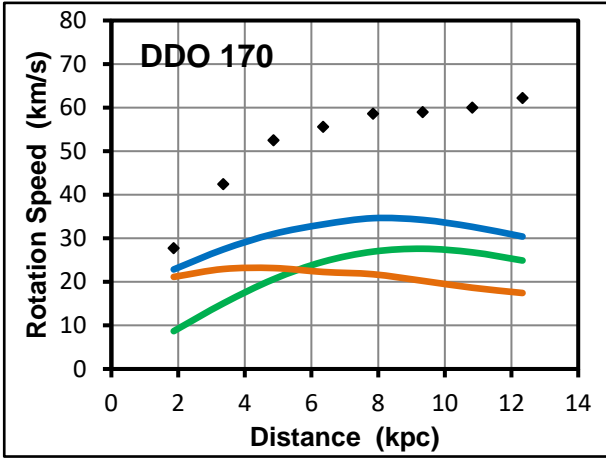
Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Υ, M-to-L	1.35
ξ, slope	-1.27
DM factor	3.1
Fit quality	OK just

Comments:
Fit uses a very high mass-to-light ratio, Υ=1.35. Galaxy is gas dominated in the outer regions.

ESO 079-G014
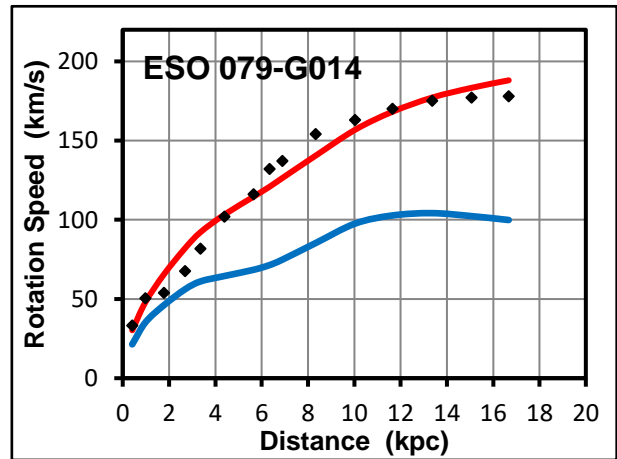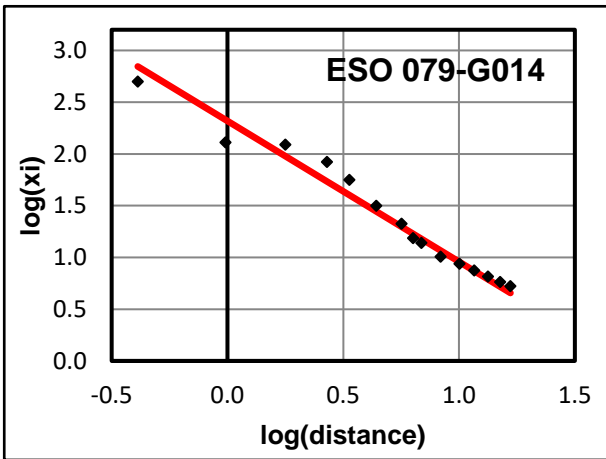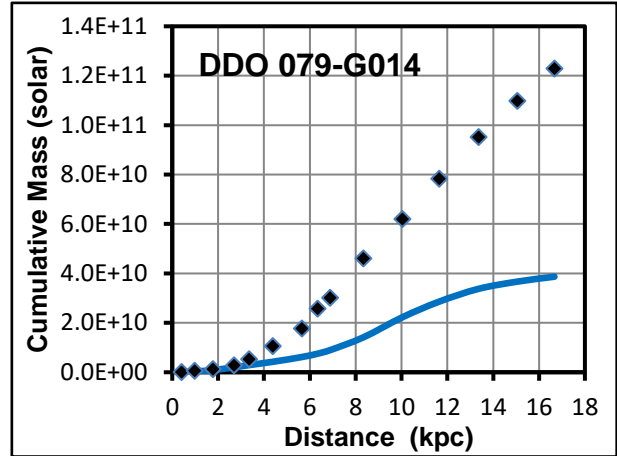
Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters
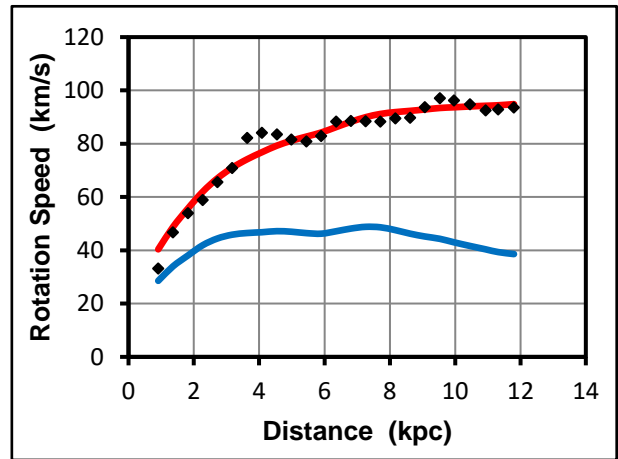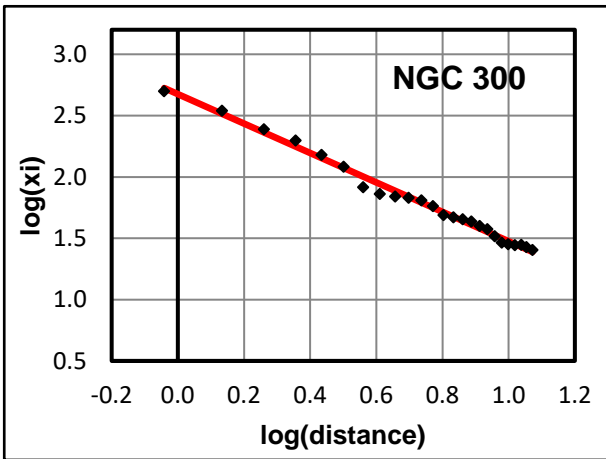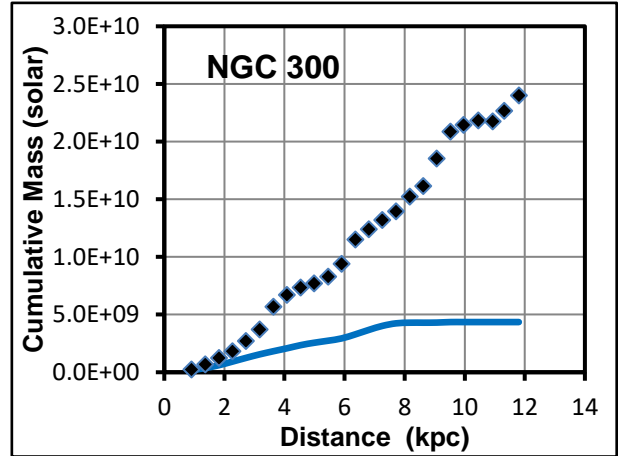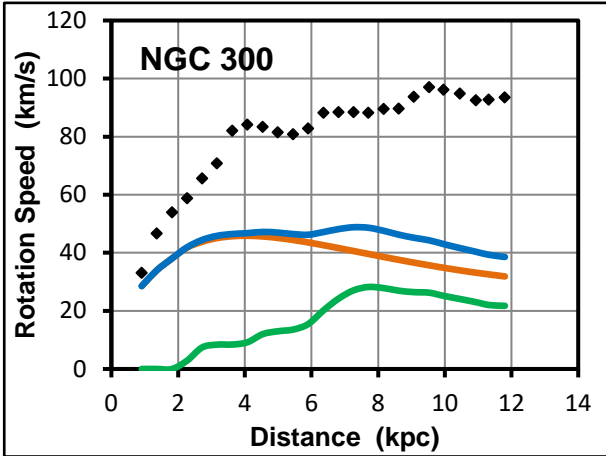
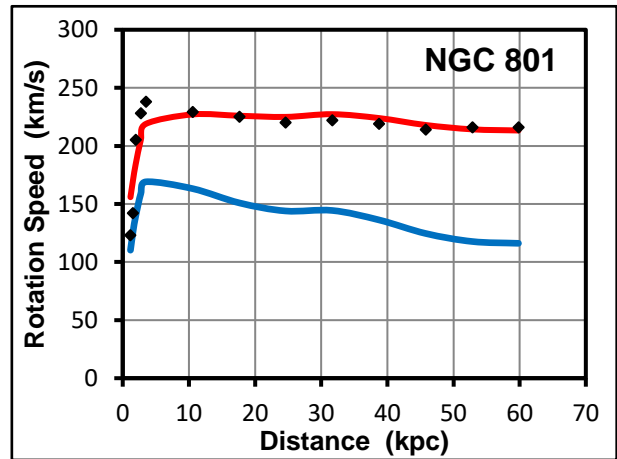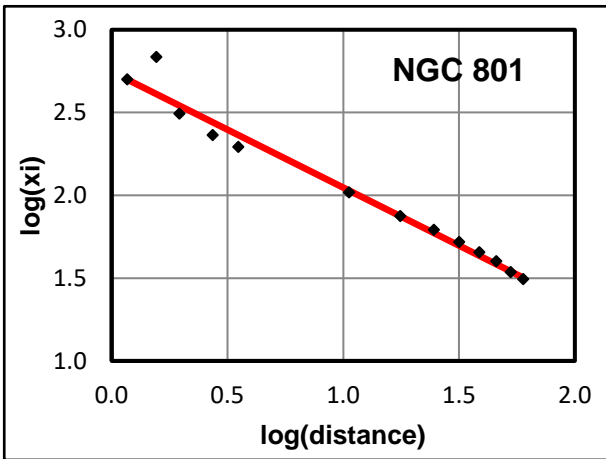| Y, M-to-L	0.54
ξ, slope	-1.36
DM factor	2.2
Fit quality	poor

Comments:

ESO 116-G012

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

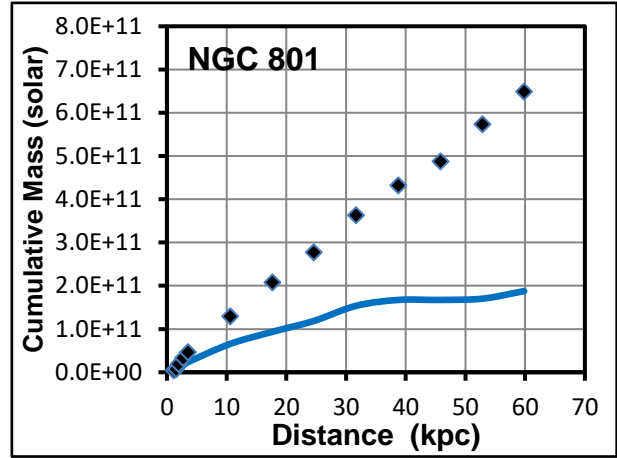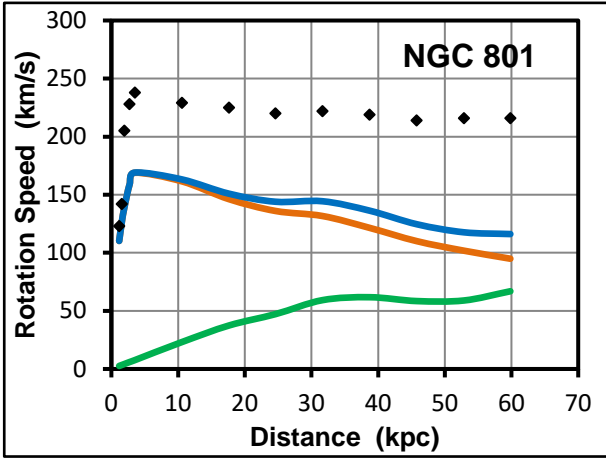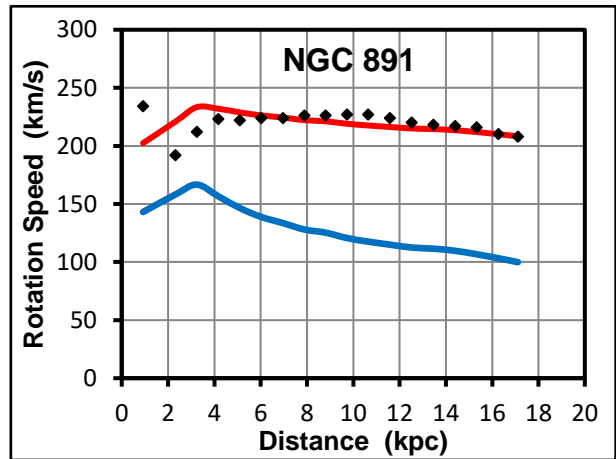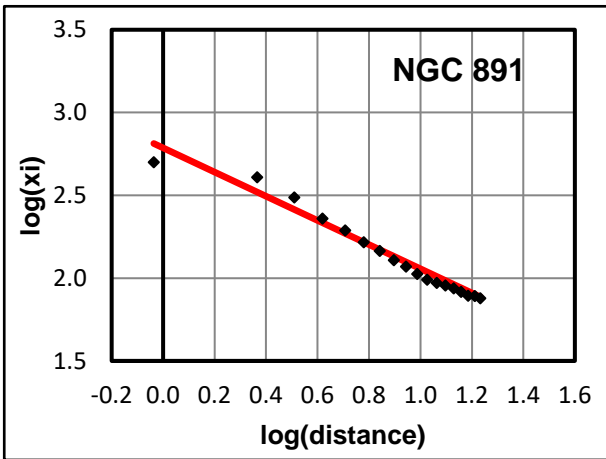|	
Υ, M-to-L	0.81
ξ, slope	-1.20
DM factor	3.20
Fit quality	OK

Comments:

ESO 563-G021

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	1.05
ξ, slope	-0.37
DM factor	1.2
Fit quality	poor

Comments:
Fit ignores outermost 5 data points. Expected velocities are higher than the observed velocities near galaxy centre (top left panel).
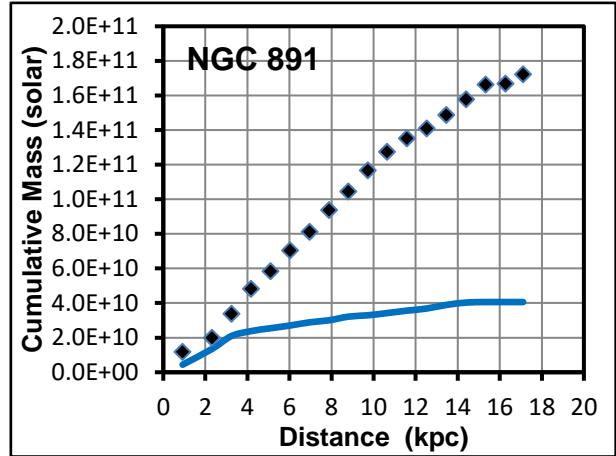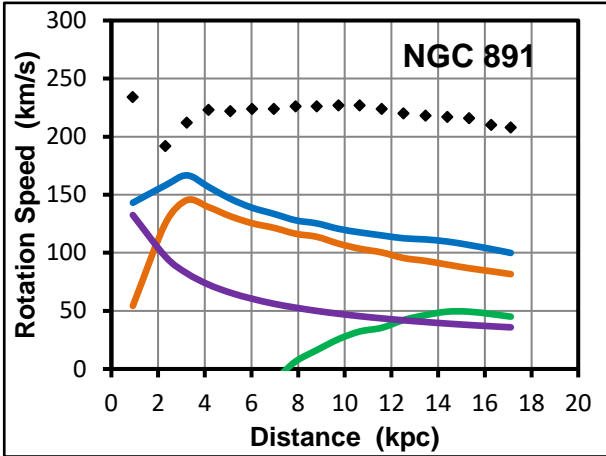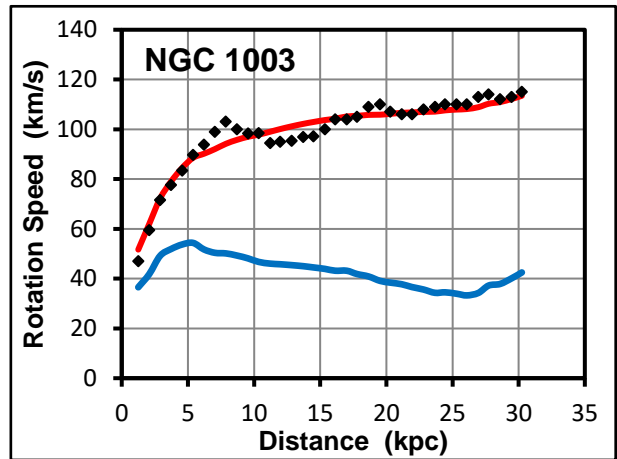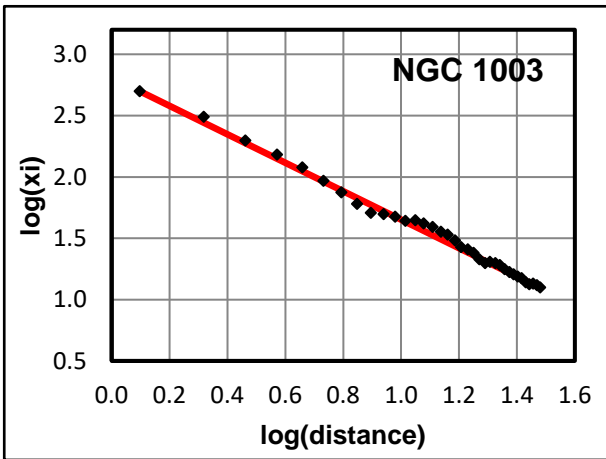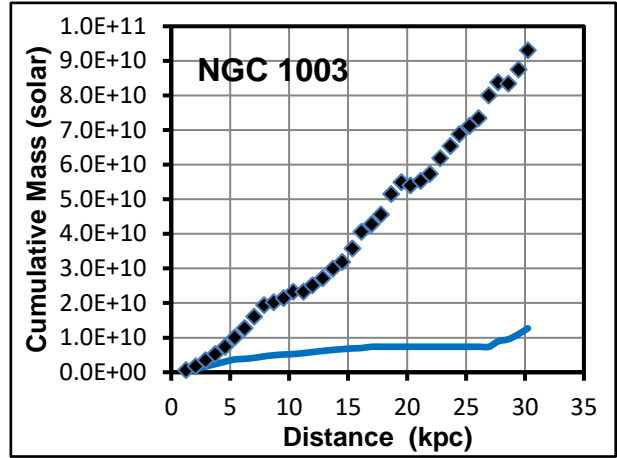
F561-1

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.39
ξ, slope	-1.32
DM factor	0.4
Fit quality	poor

Comments:
Fit ignores outermost 2 data points, so fit only uses 4 points. Fit does not work at large distances as observed curve has turned over, and because outermost 2 data points not used.

F565-V2

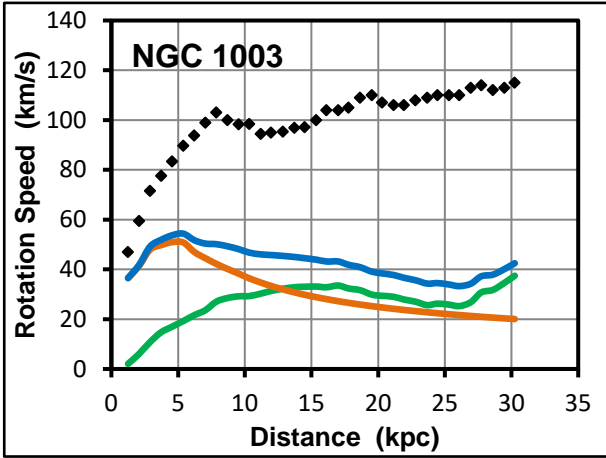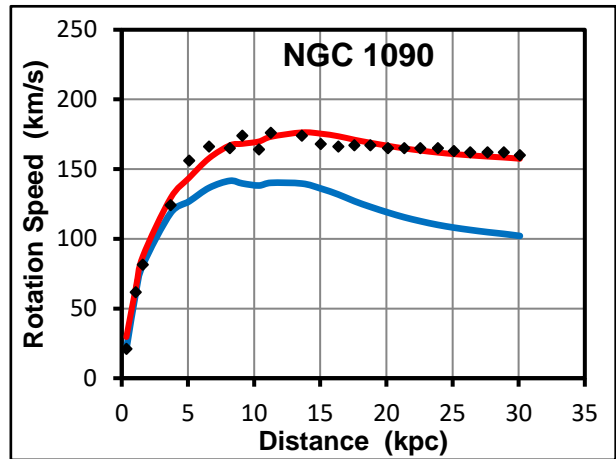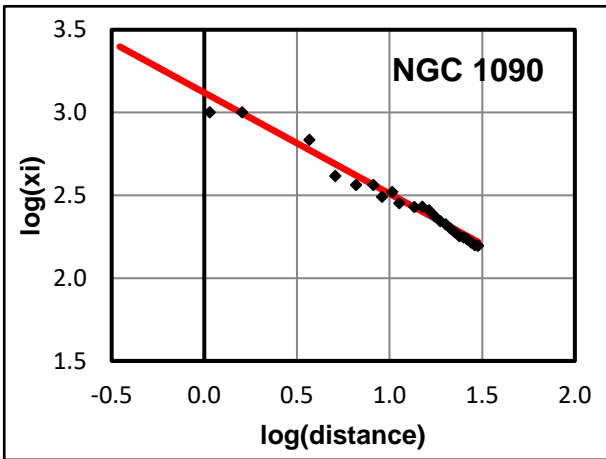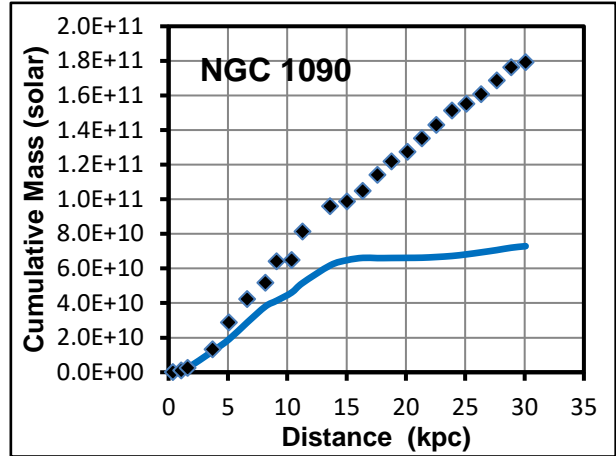Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

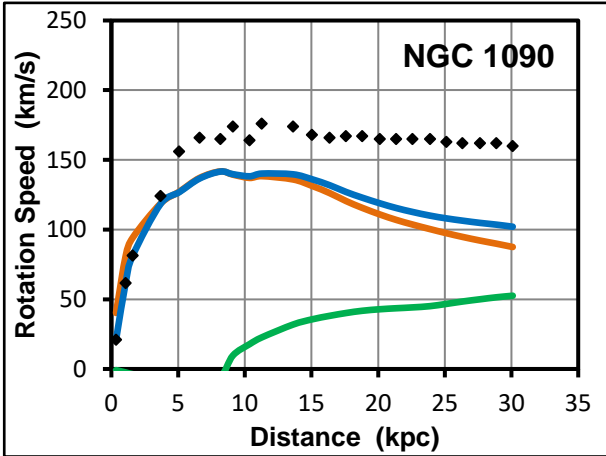| Y, M-to-L	2.00
ξ, slope	-1.87
DM factor	3.8
Fit quality	OK

Comments:
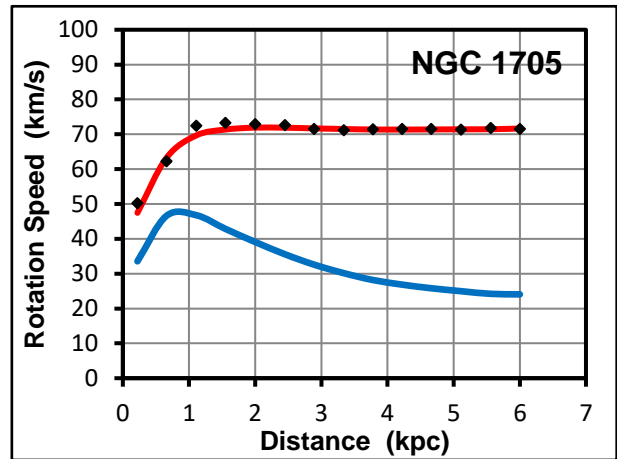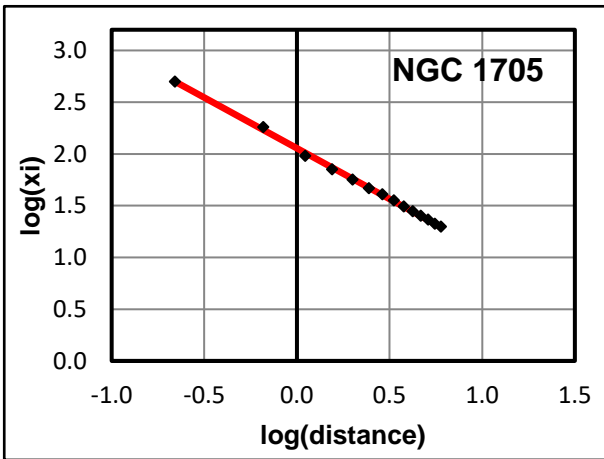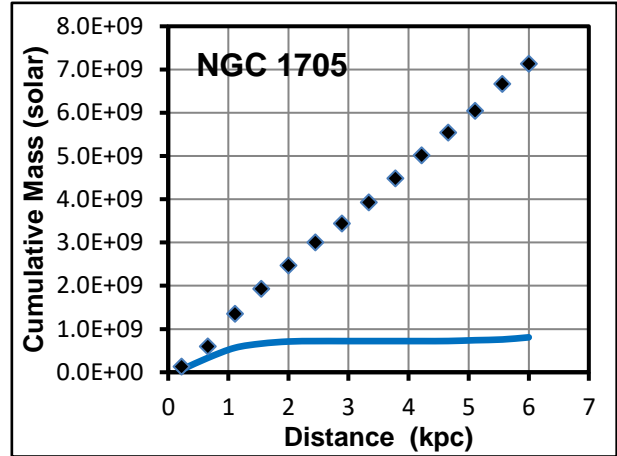High mass-to-light ratio, Y=2.00.

F568-1

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Υ, M-to-L	1.40
ξ, slope	-1.92
DM factor	2.5
Fit quality	poor

Comments:
Fit omits outermost 5 data points. ξ plot shows levelling off in outer regions; hence decision to omit data points.
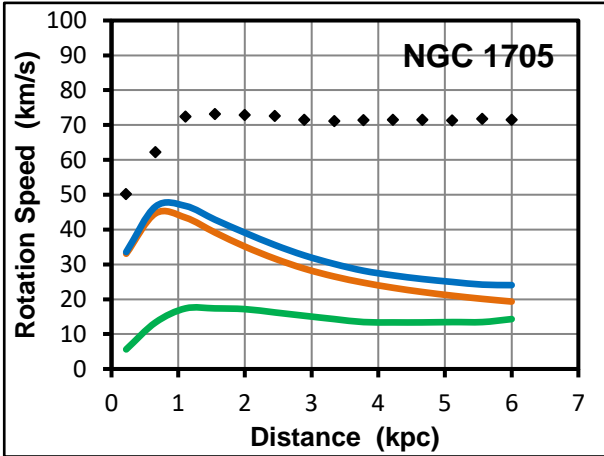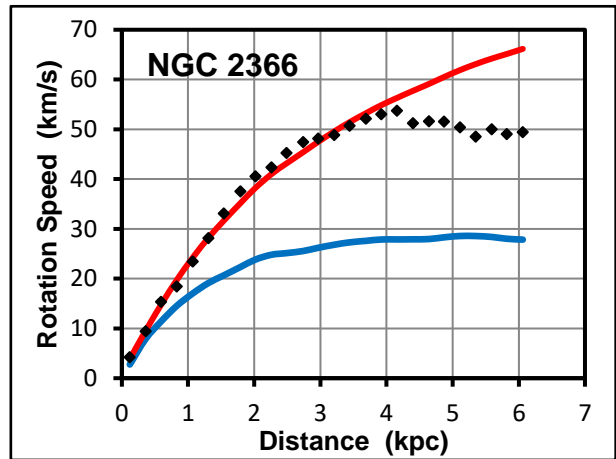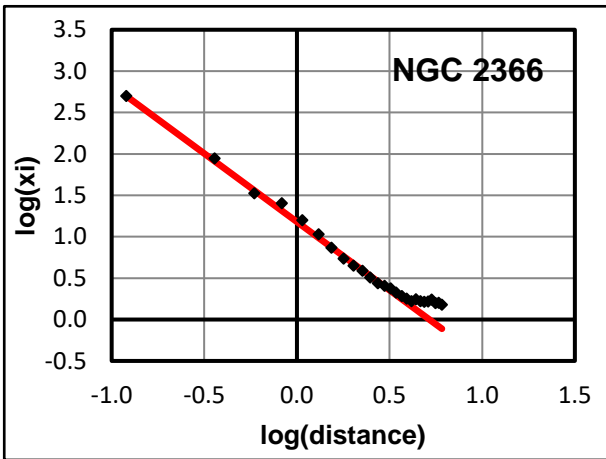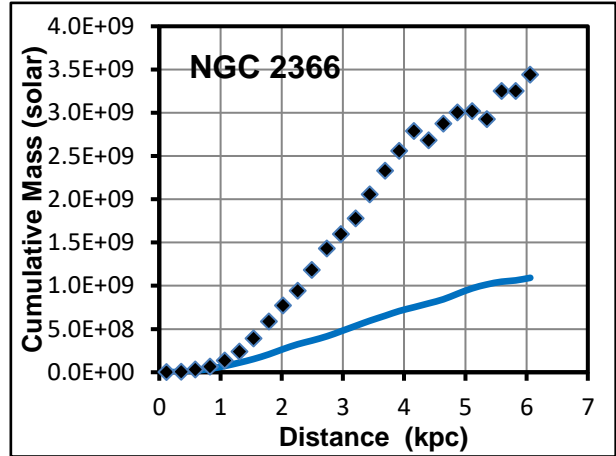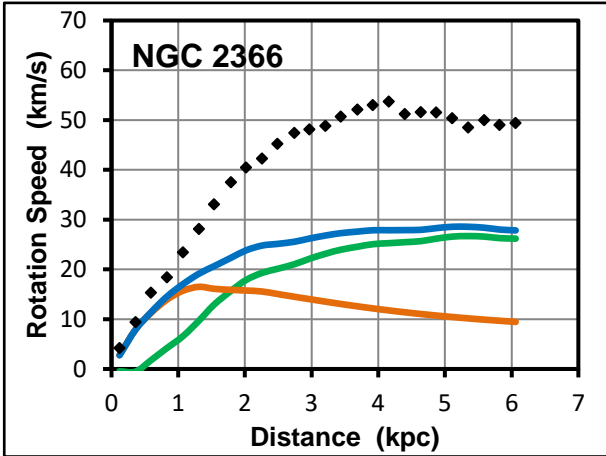
NGC 0055

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.45
ξ, slope	-1.24
DM factor	2.5
Fit quality	OK

Comments:
ξ plot (bottom left) shows sign of levelling off at large distances, as does the observed rotation curve. Fit does not take this into account, which is contributing to poor fit.
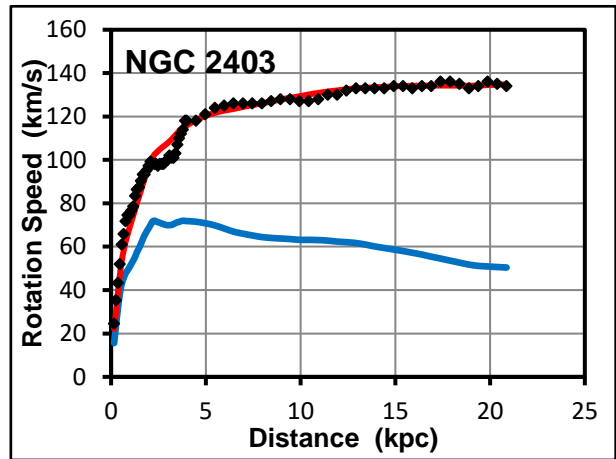
NGC 0100
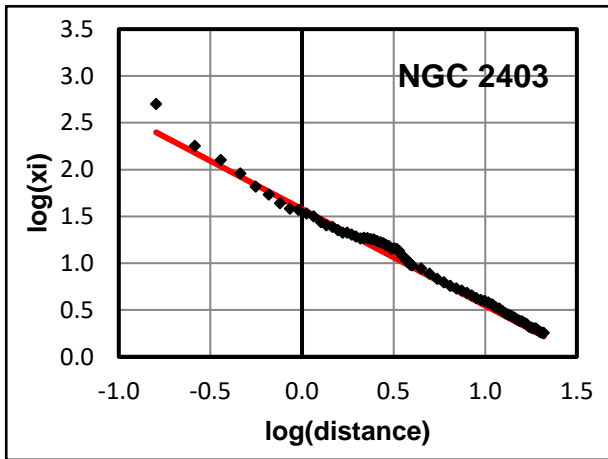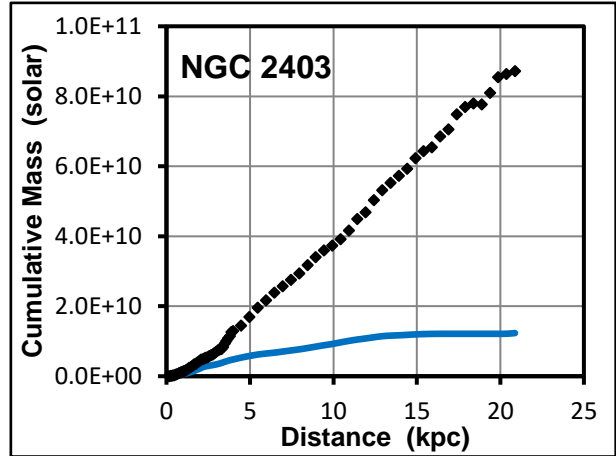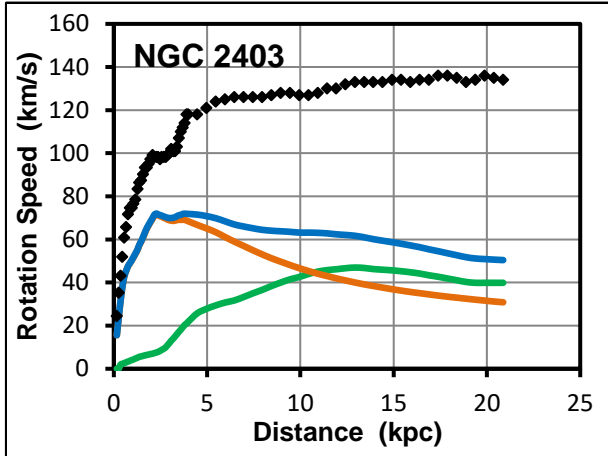

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Υ, M-to-L	0.63
ξ, slope	-1.37
DM factor	4.6
Fit quality	good

Comments:

NGC 0247
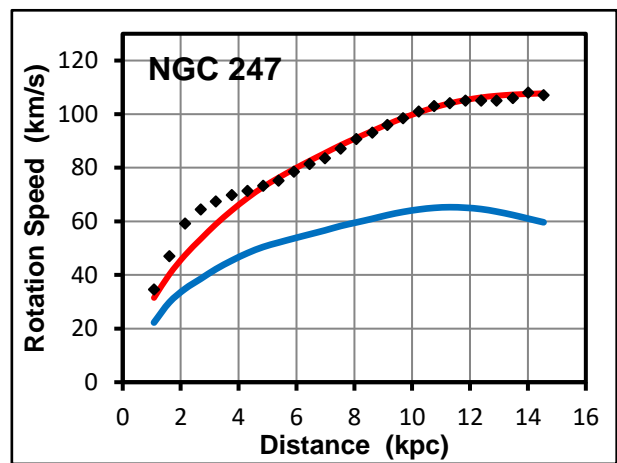
Top left: rotation curve from SPARC data
Top right: cumulative mass
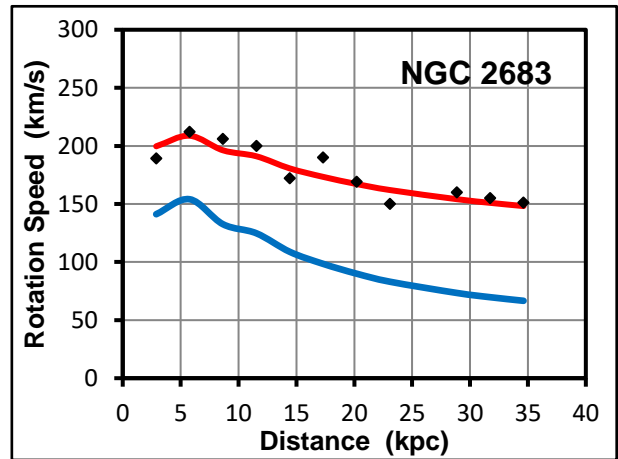Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.99
ξ, slope	-1.17
DM factor	2.2
Fit quality	OK

Comments:
Does not fit 2 to 4 kpc very well.

NGC 0289
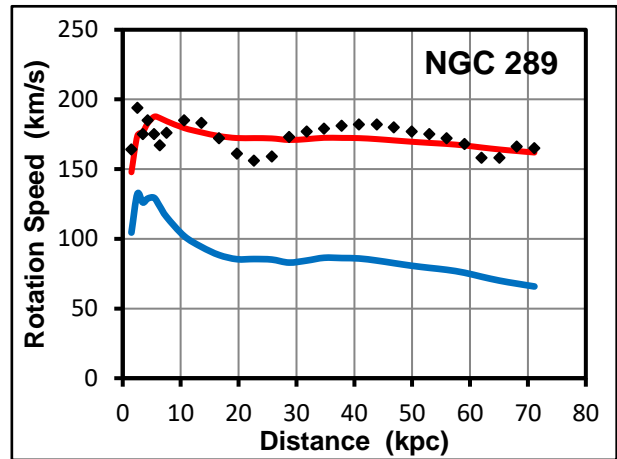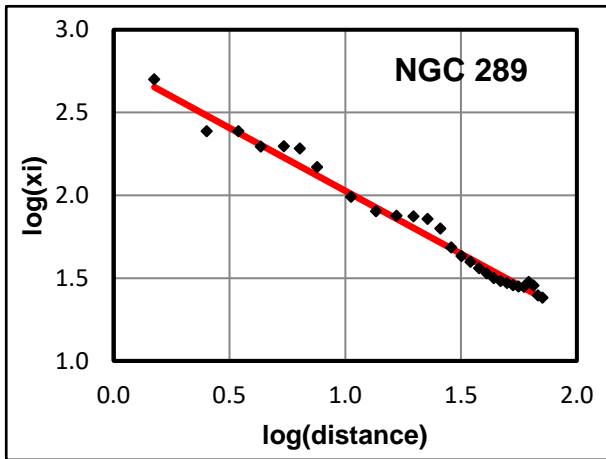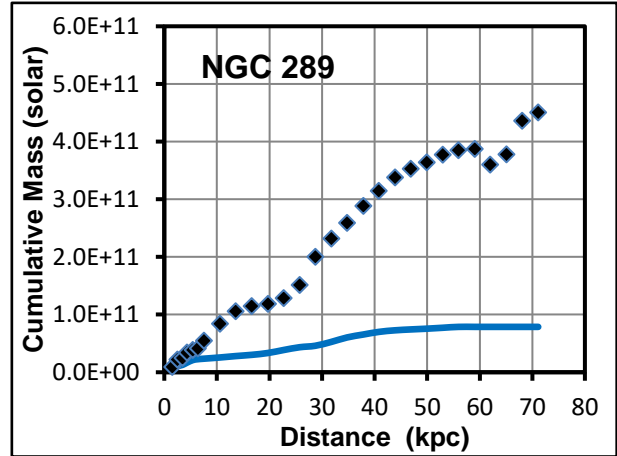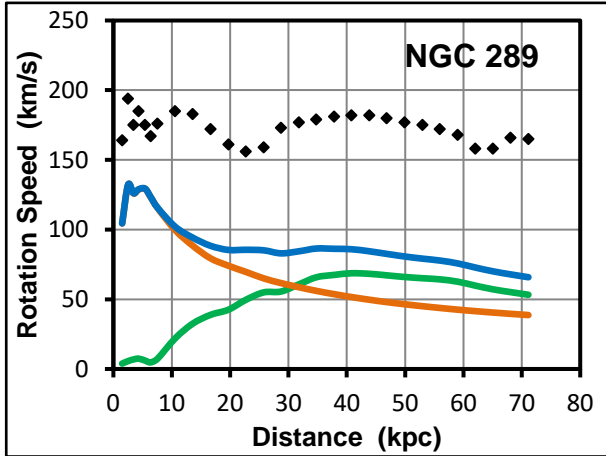
Top left: rotation curve from SPARC data
Top right: cumulative mass
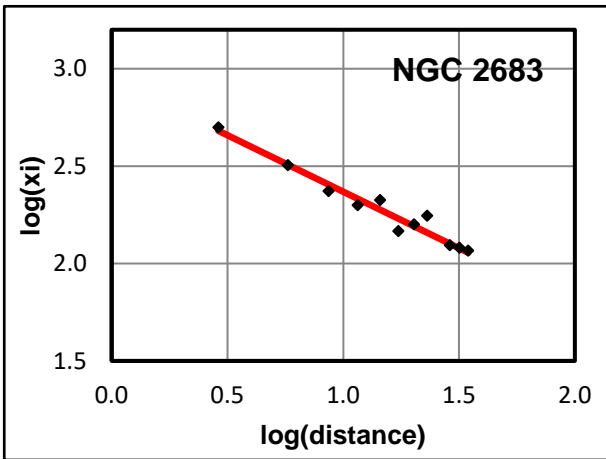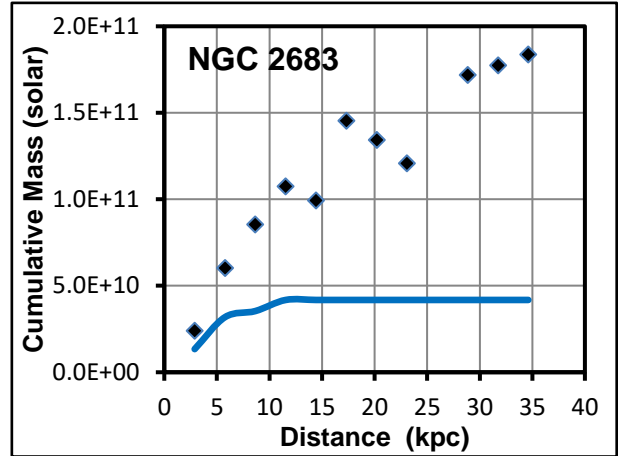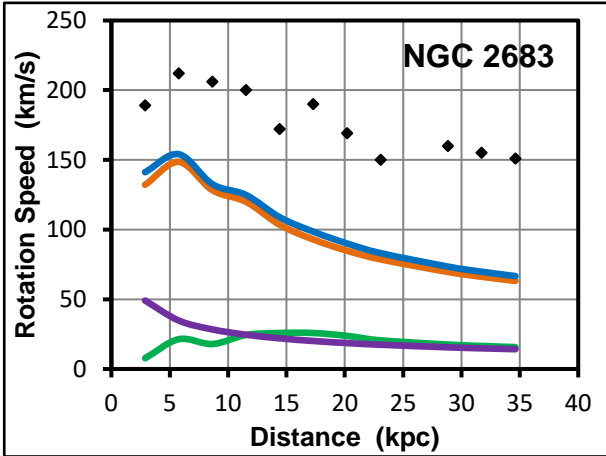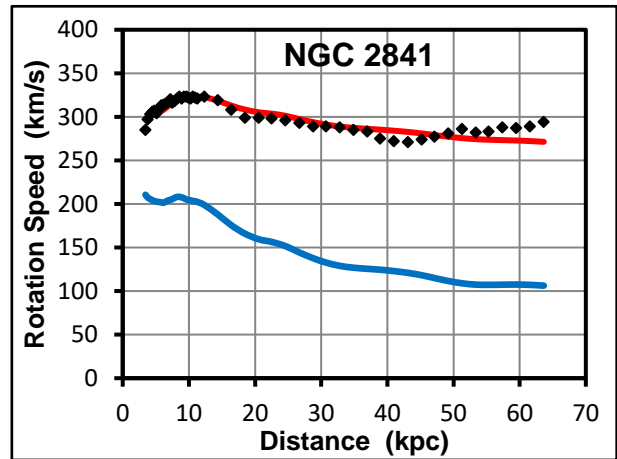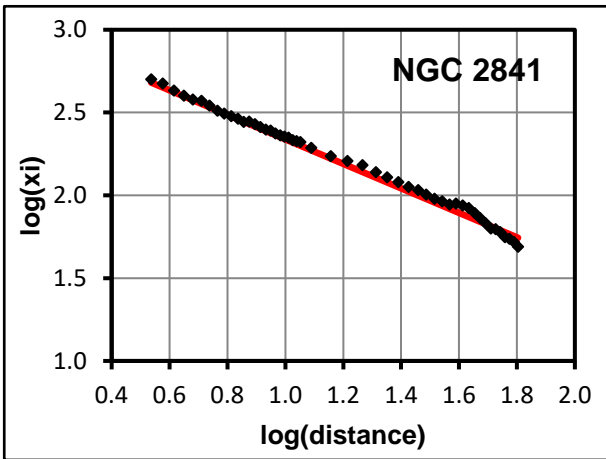Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Υ, M-to-L	0.34
ξ, slope	-0.76
DM factor	4.7
Fit quality	poor

Comments:
Although the fit follows the general trend of the observed rotation curve, it does not follow the detailed structure at all.

NGC 0300

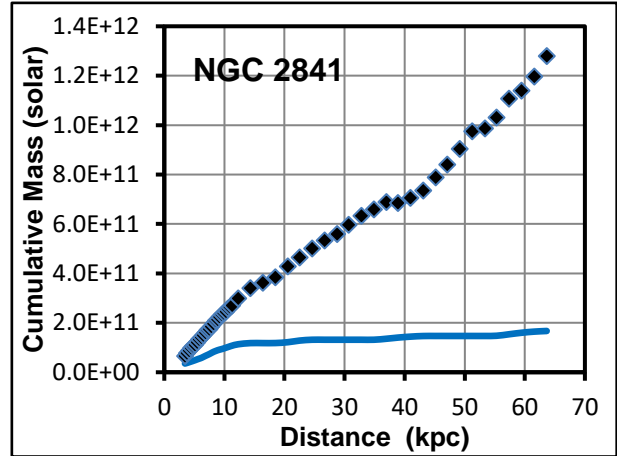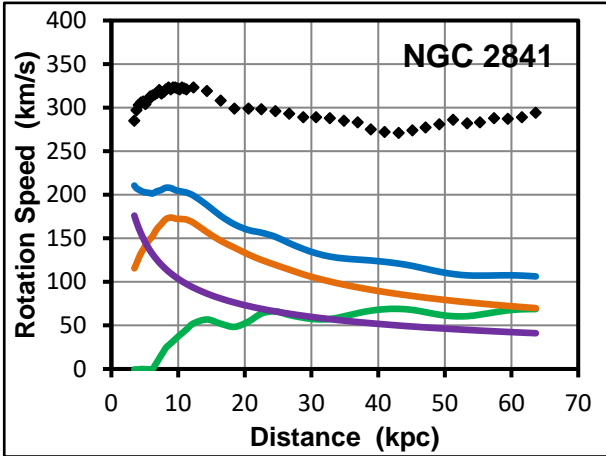
Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.82
ξ, slope	-1.20
DM factor	4.5
Fit quality	OK

Comments:

NGC 0801

Top left: rotation curve from SPARC data
Top right: cumulative mass
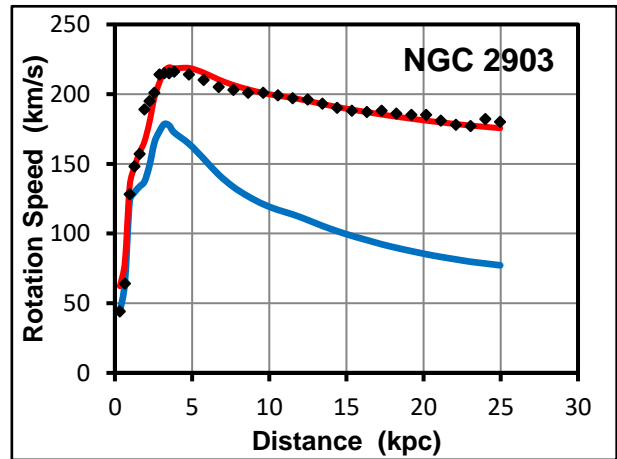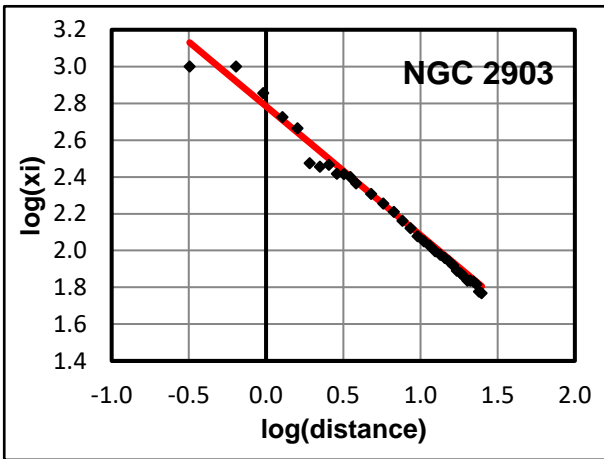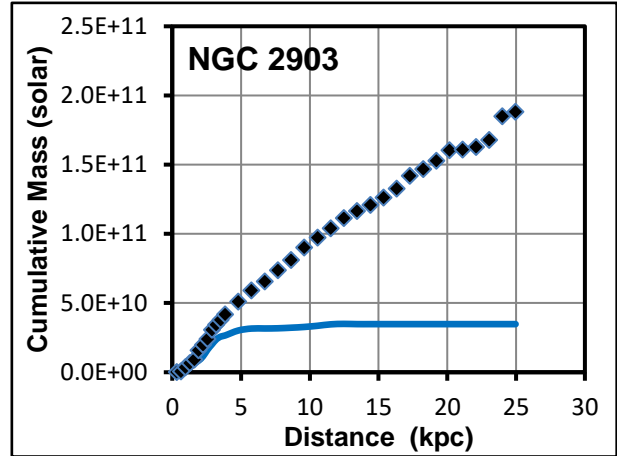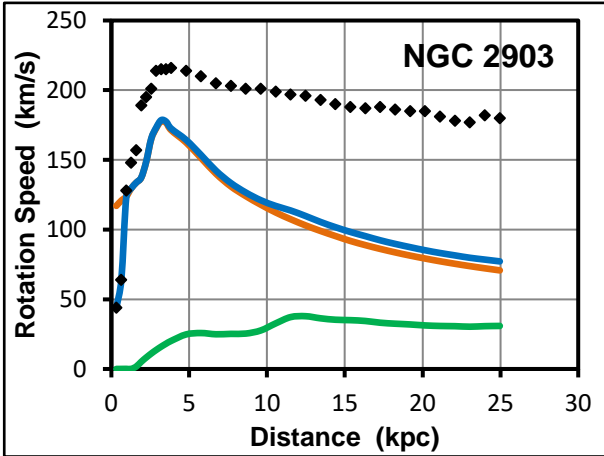Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

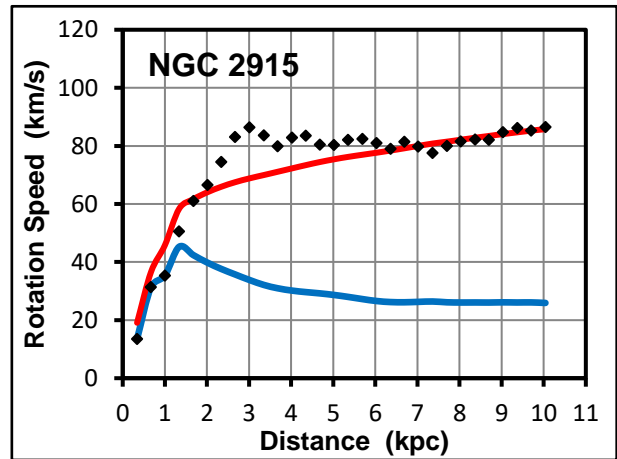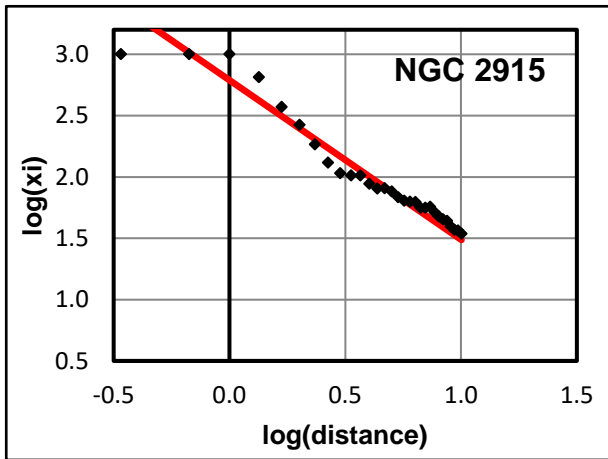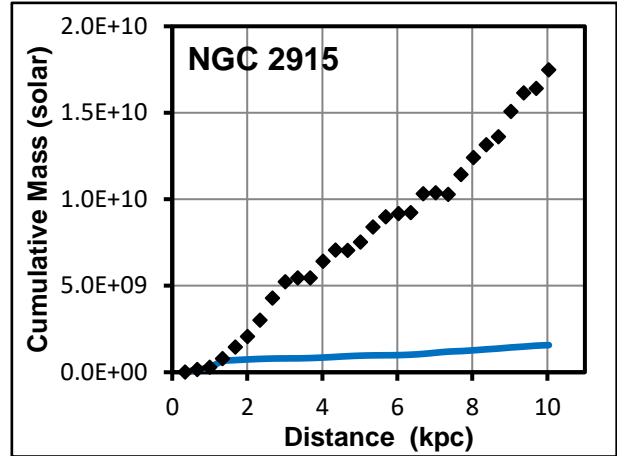| Y, M-to-L	0.36
ξ, slope	-0.70
DM factor	2.5
Fit quality	OK

Comments:

NGC 891

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

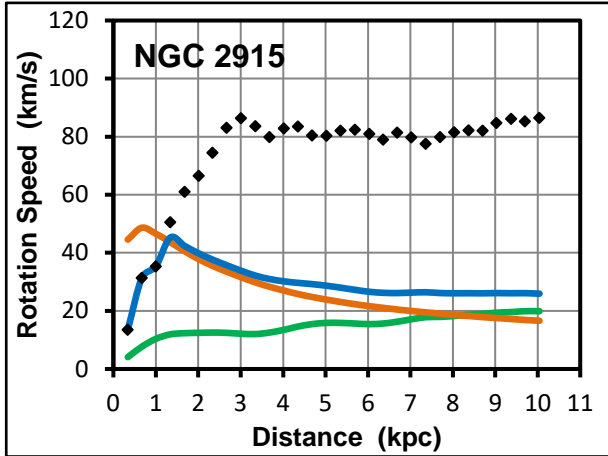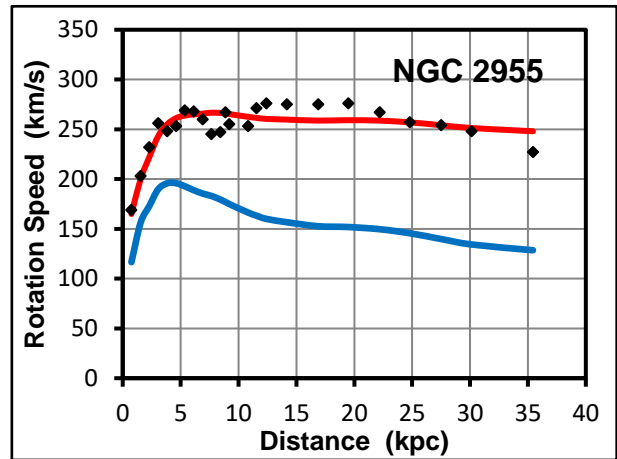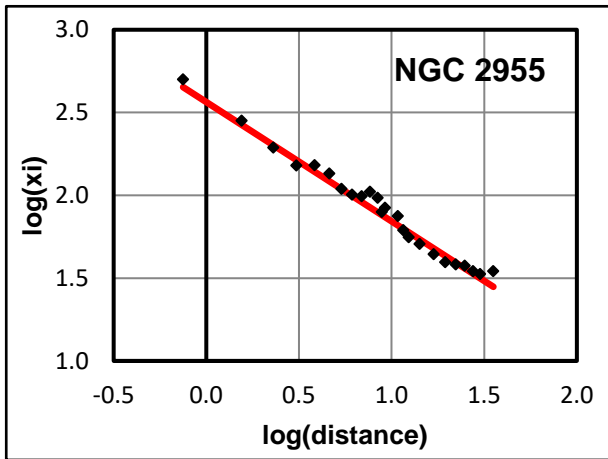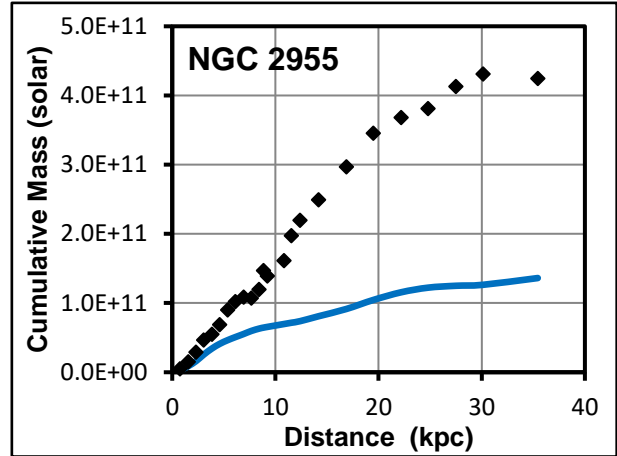|	
Bulge, M-to-L	0.27
Disk, M-to-L	0.20
ξ, slope	-0.73
DM factor	3.2
Fit quality	poor

Comments:

NGC 1003

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.41
ξ, slope	-1.16
DM factor	9.9
Fit quality	bumpy

Comments:

NGC 1090

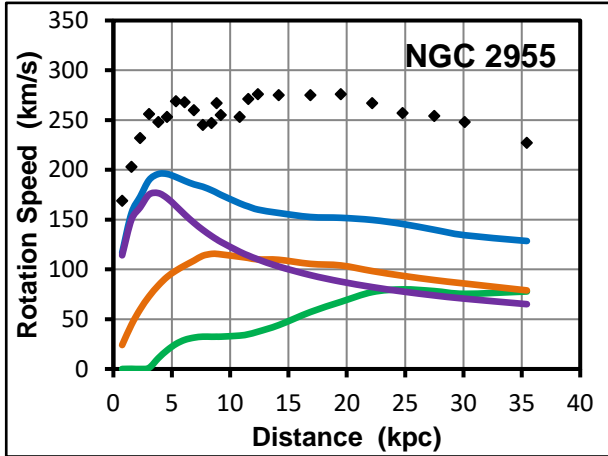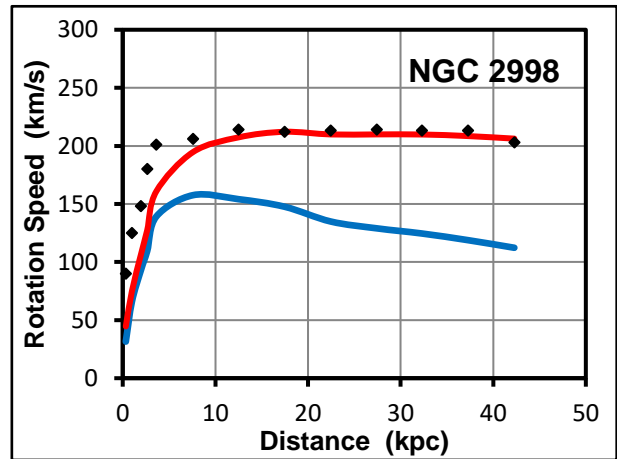

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

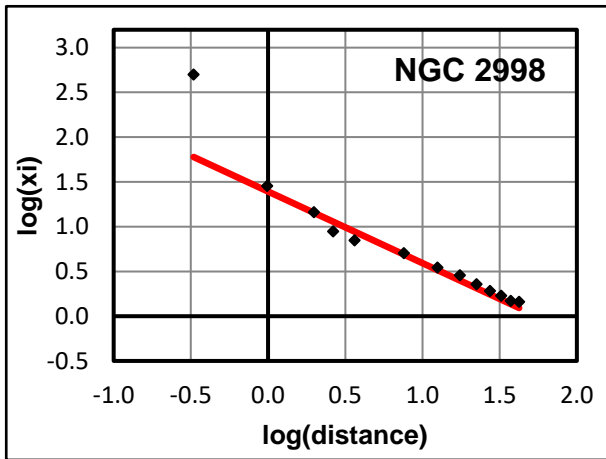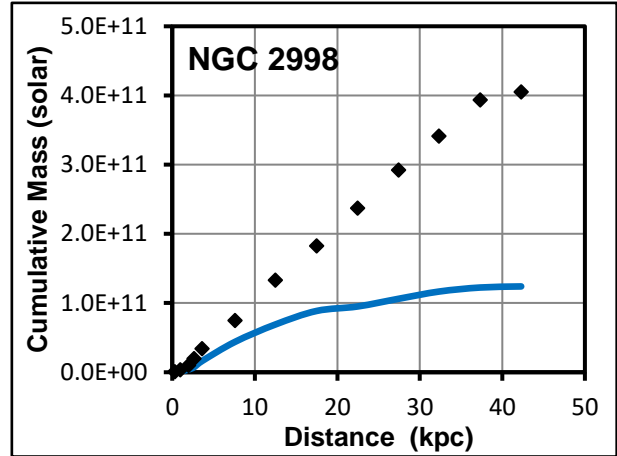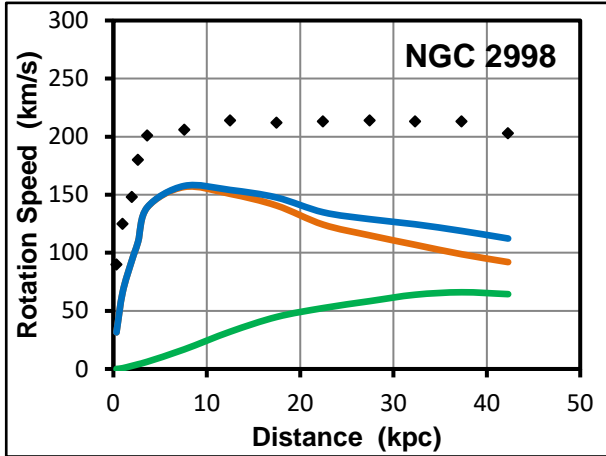| Y, M-to-L	0.68
ξ, slope	-0.61
DM factor	1.5
Fit quality	OK

Comments:

NGC 1705

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

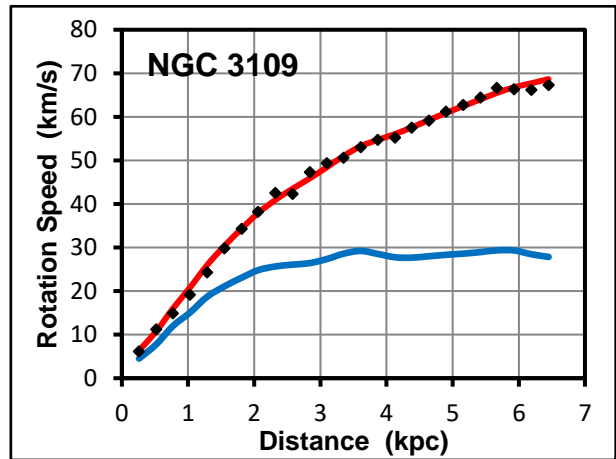|	
Υ, M-to-L	0.99
ξ, slope	-0.98
DM factor	7.8
Fit quality	good

Comments:

NGC 2366

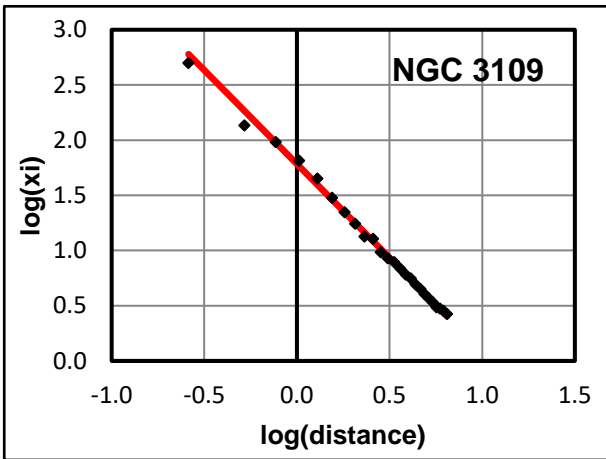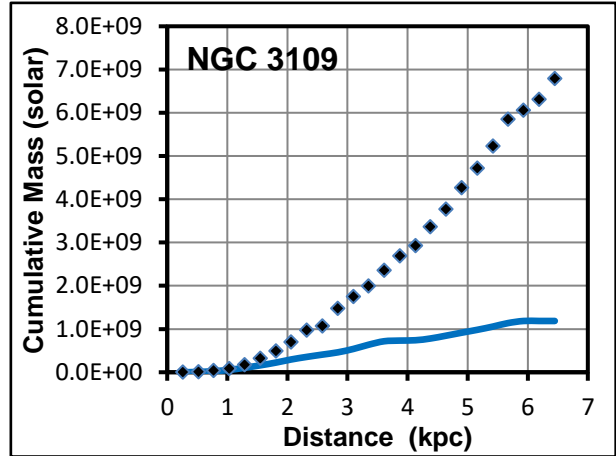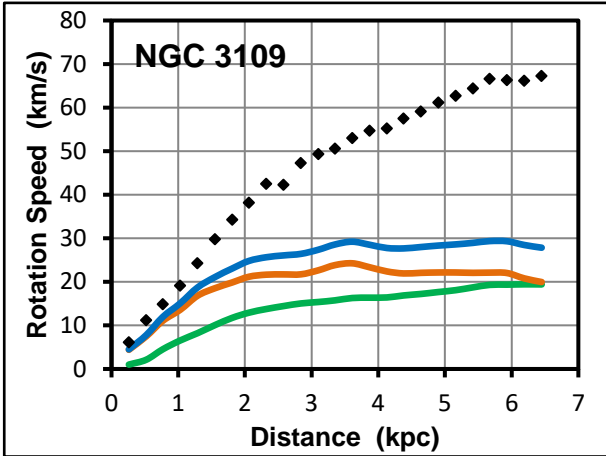Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.50
ξ, slope	-1.65
DM factor	2.1
Fit quality	OK

Comments:
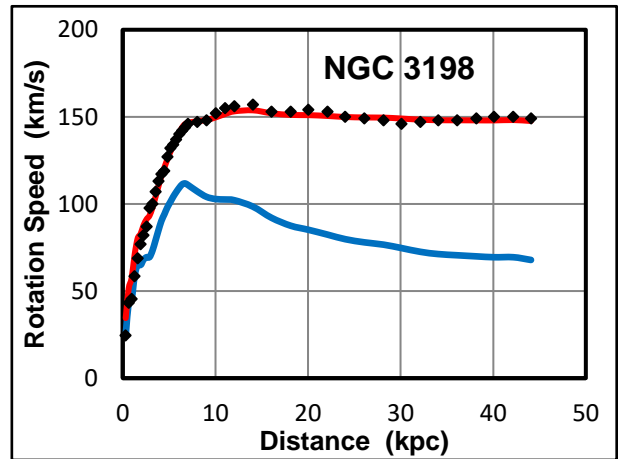Fit ignores outer regions where ξ-function departs from linearity.

NGC 2403

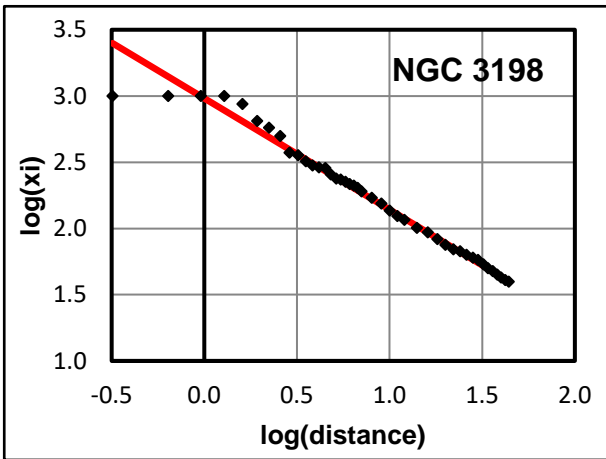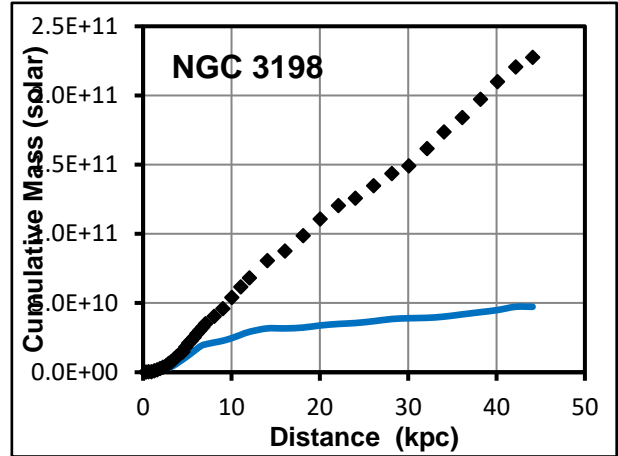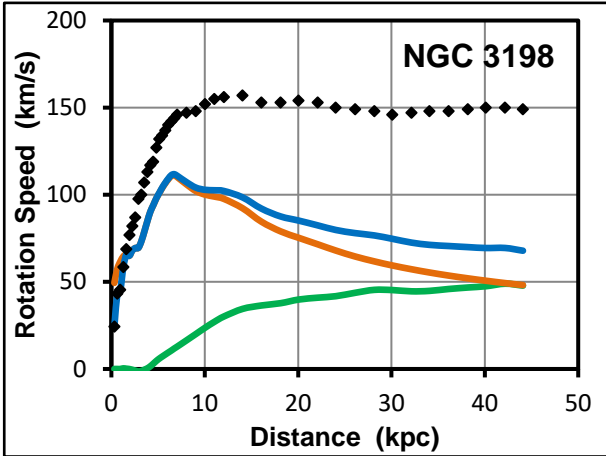Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.45
ξ, slope	-1.02
DM factor	6.1
Fit quality	good

Comments:
Red line is a pretty good fit all the way to 21 kpc. There is an obvious deviation around 3 kpc, and a smaller deviation around 10 kpc.
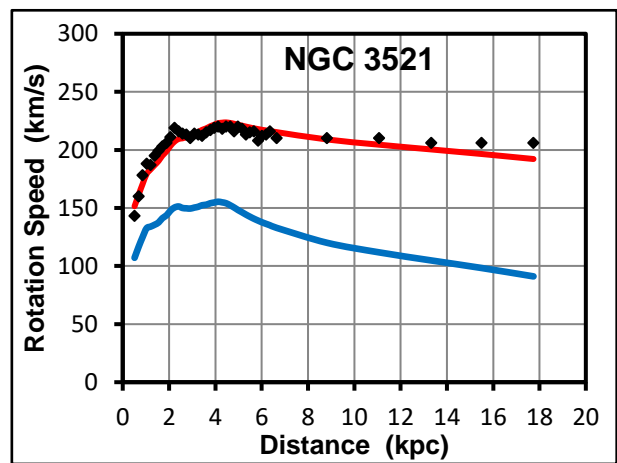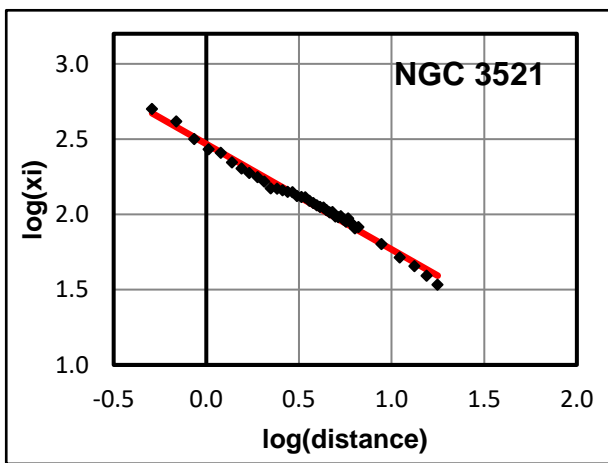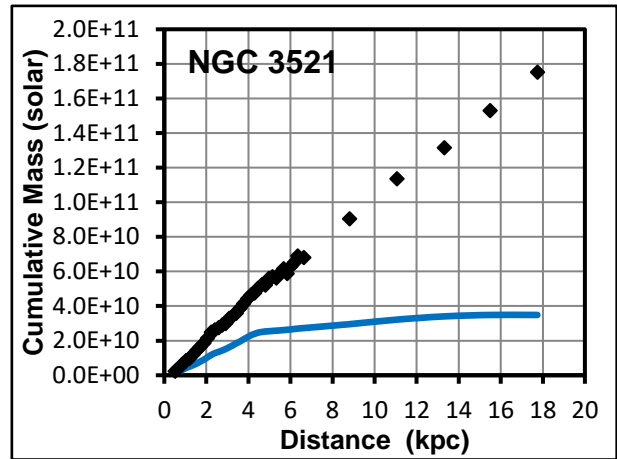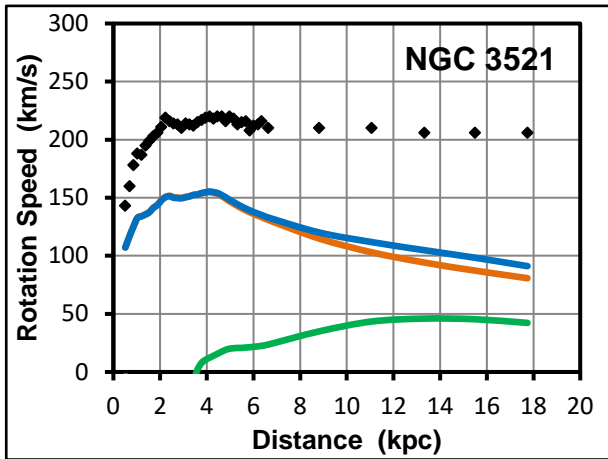
NGC 2683

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

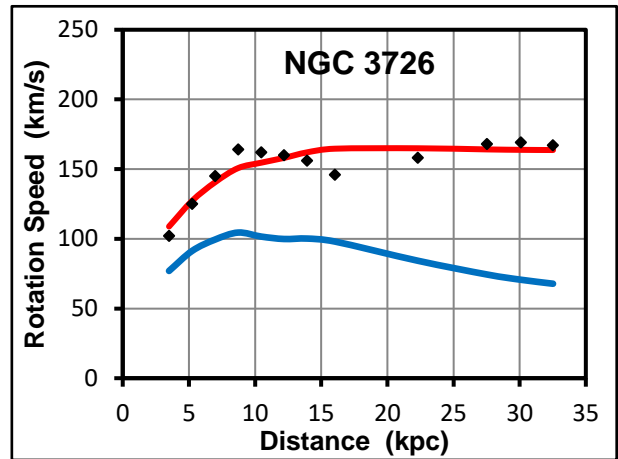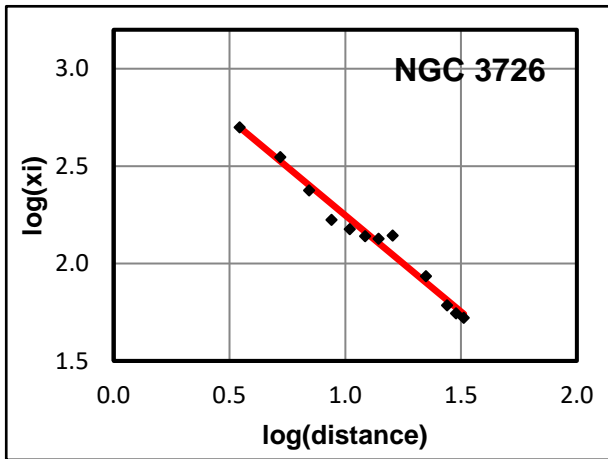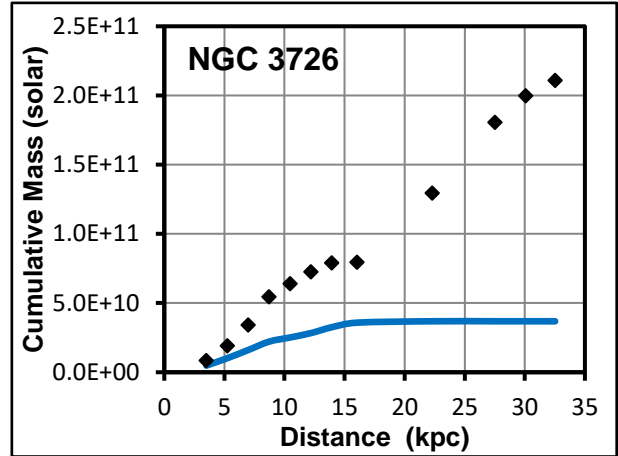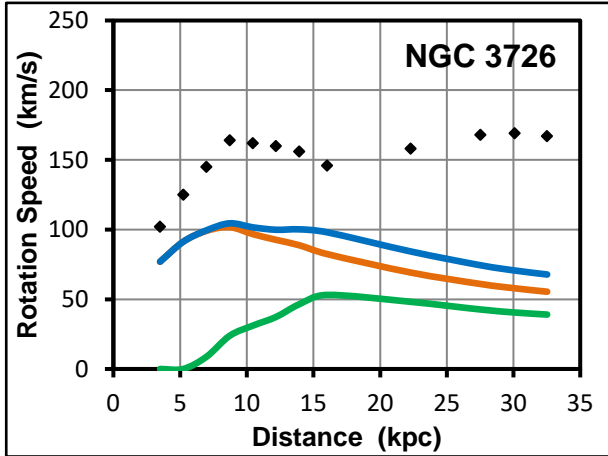| Bulge, M-to-L	0.30
Disk, M-to-L	0.42
ξ, slope	-0.58
DM factor	3.4
Fit quality	bumpy

Comments:

NGC 2841

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Bulge, M-to-L	0.54
Disk, M-to-L	0.50
ξ, slope	-0.74
DM factor	6.7
Fit quality	OK

Comments:
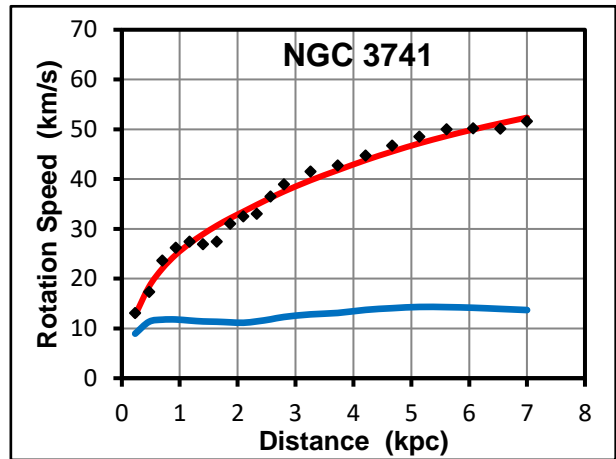In bottom right, the red line departs from the observations beyond 45 kpc.

NGC 2903
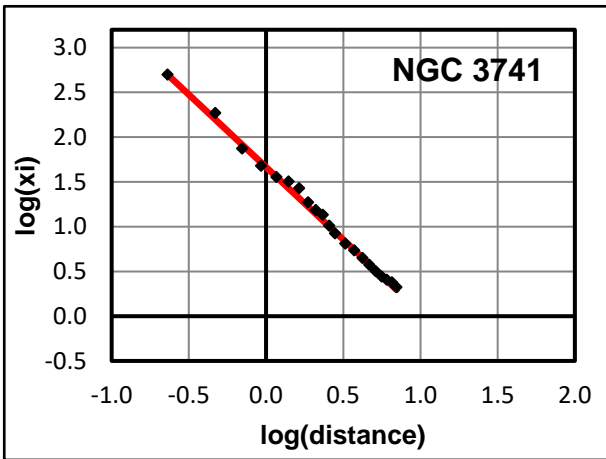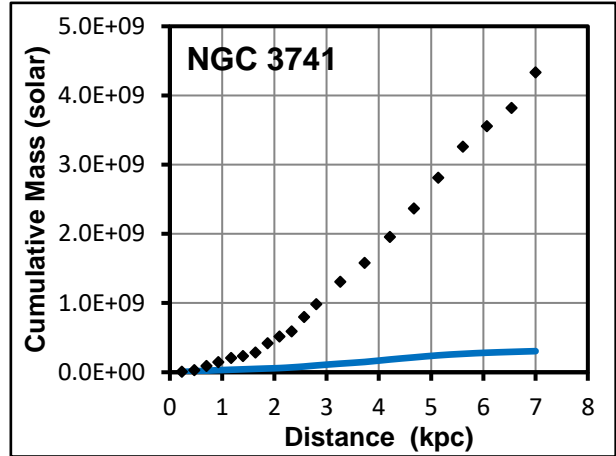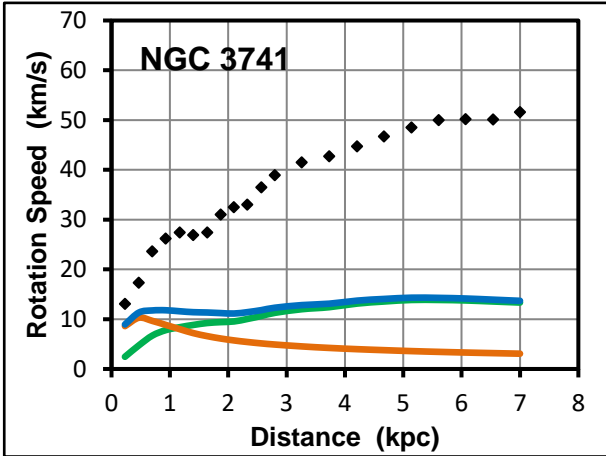

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

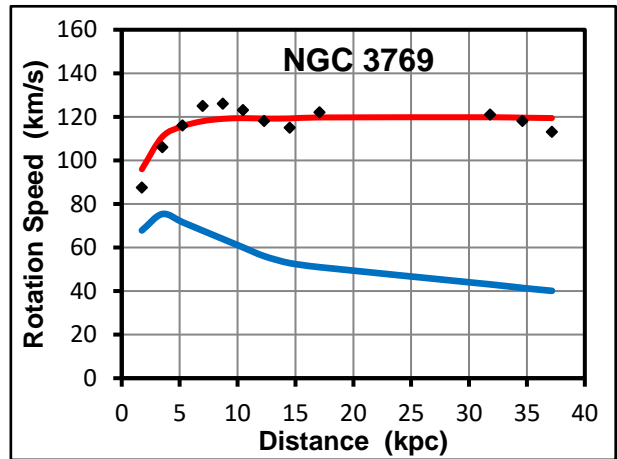|	
Y, M-to-L	0.35
ξ, slope	-0.70
DM factor	4.4
Fit quality	OK

Comments:

NGC 2915

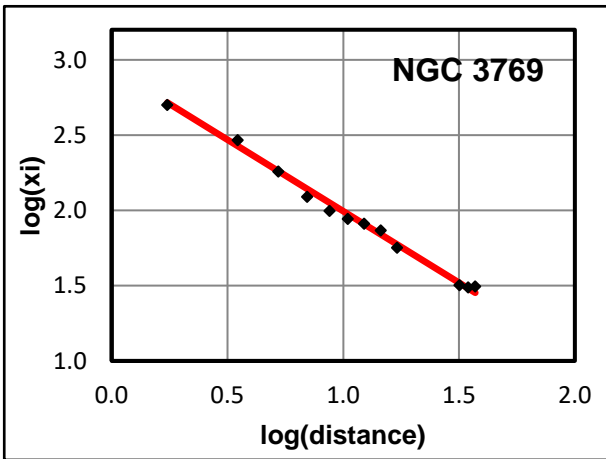Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

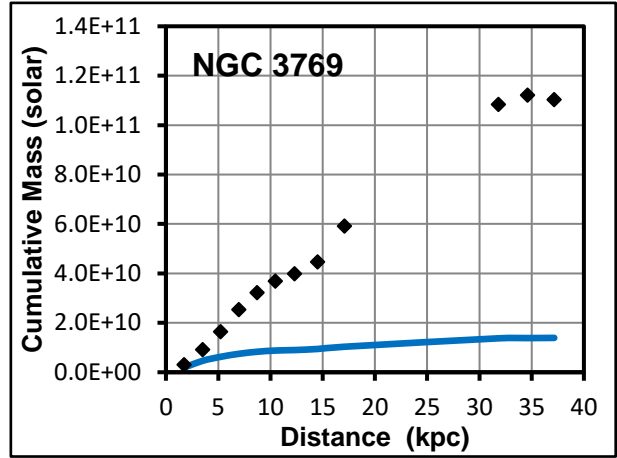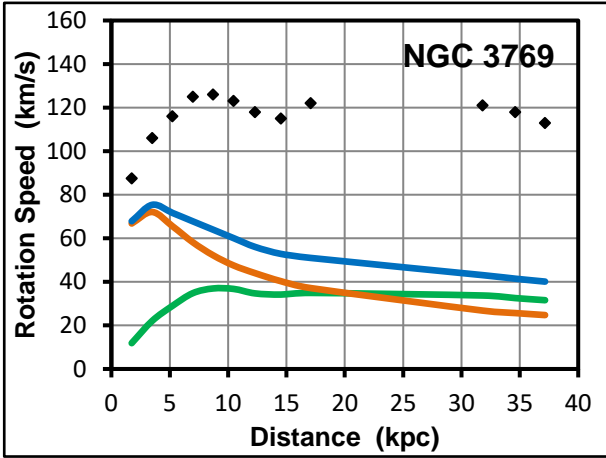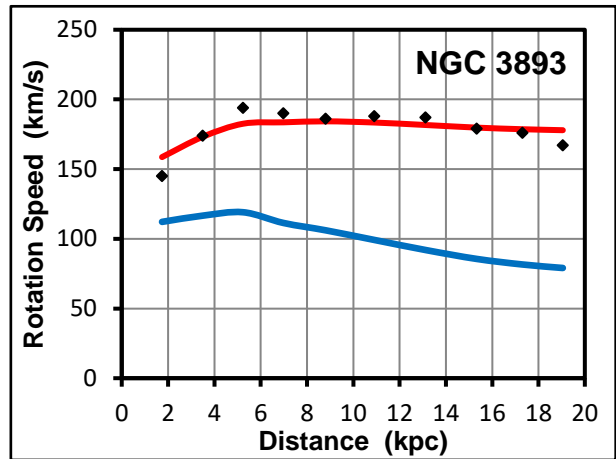|	
Y, M-to-L	0.99
ξ, slope	-1.30
DM factor	10.1
Fit quality	poor

Comments:

NGC 2955

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

|	
Bulge, M-to-L	0.49
Disk, M-to-L	0.20
ξ, slope	-0.72
DM factor	2.1
Fit quality	bumpy

Comments:

NGC 2998

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

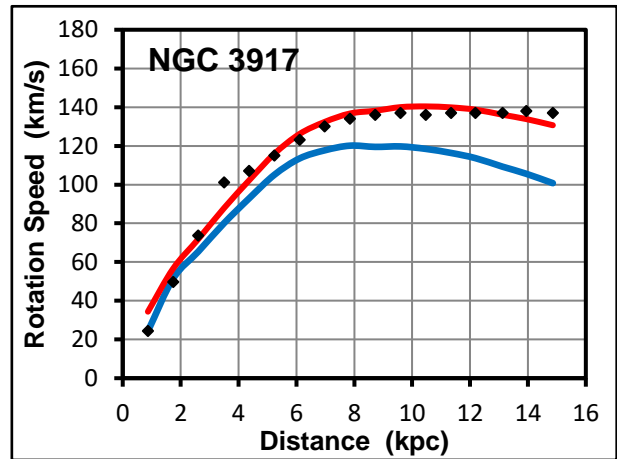| Y, M-to-L	0.50
ξ, slope	-0.80
DM factor	2.3
Fit quality	poor

Comments:

NGC 3109

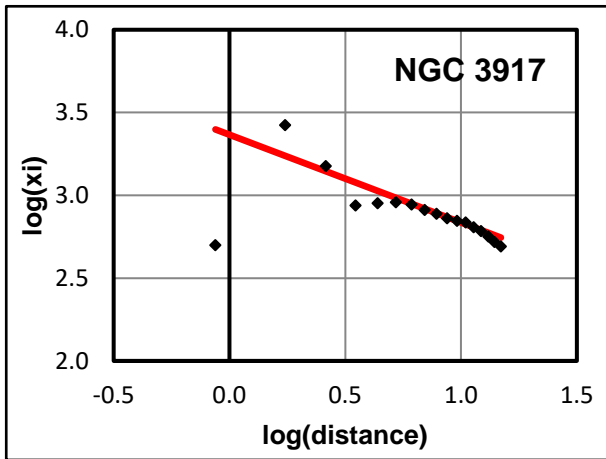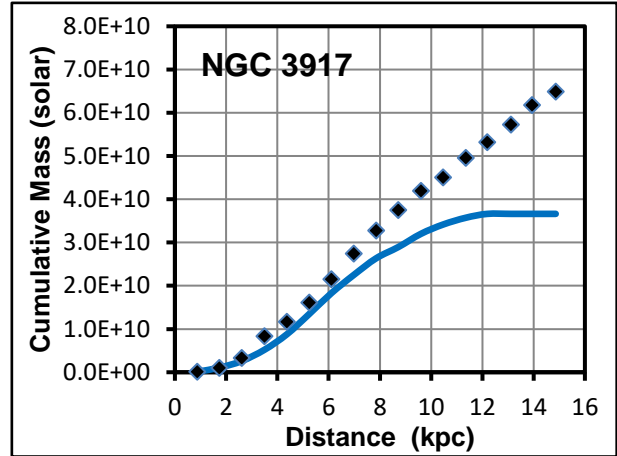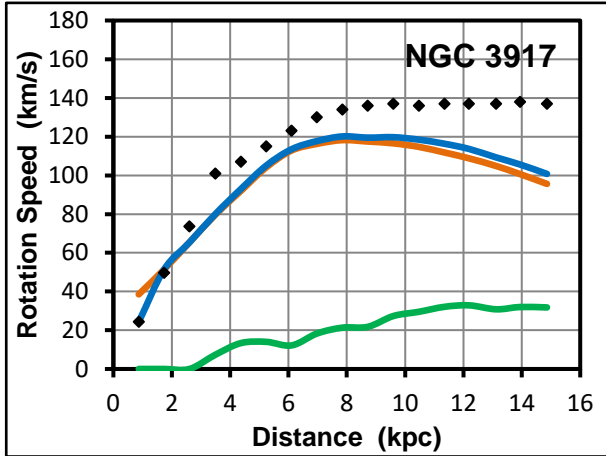
Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

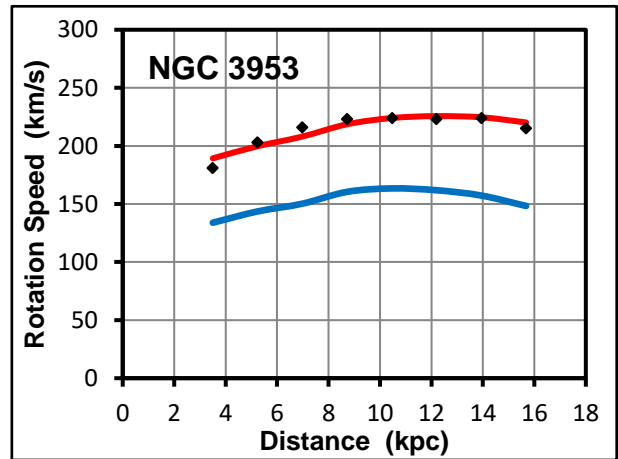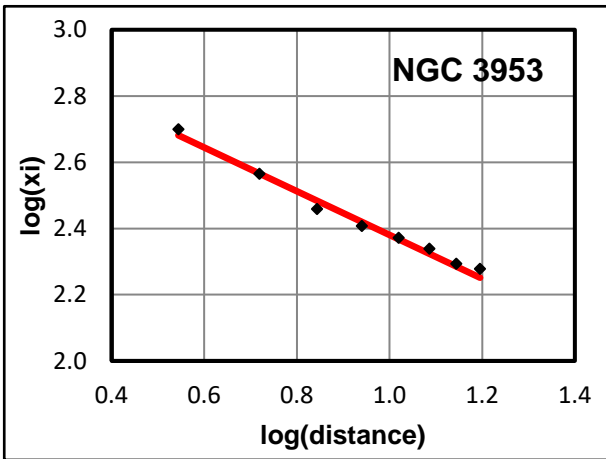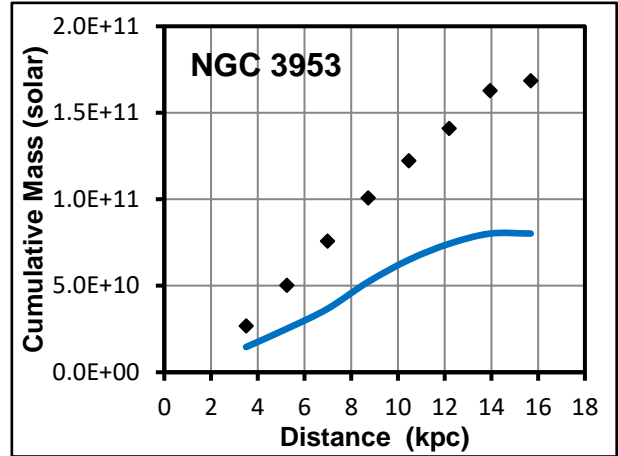| Υ, M-to-L	2.50
ξ, slope	-1.70
DM factor	4.7
Fit quality	good

Comments:

NGC 3198

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

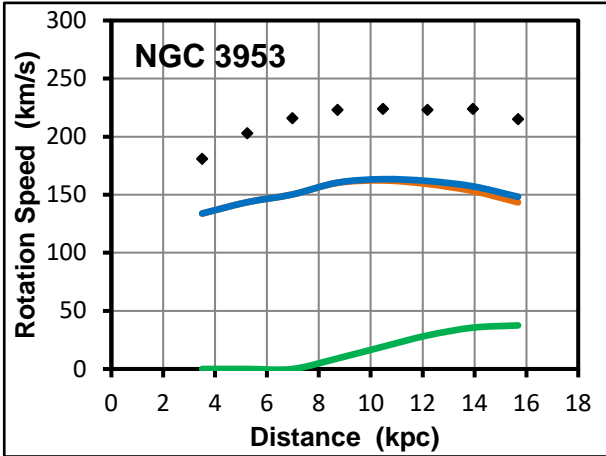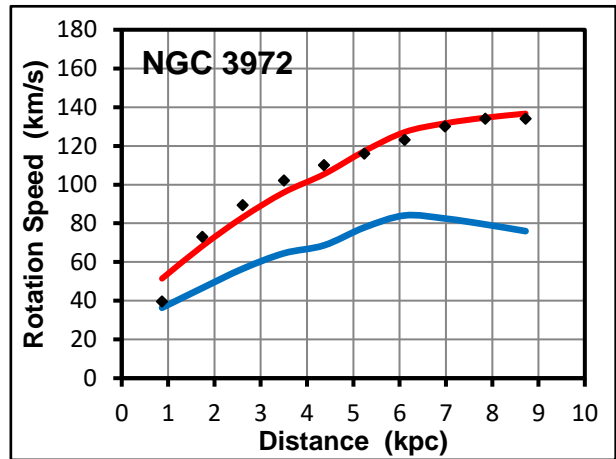| Υ, M-to-L	0.61
ξ, slope	-0.84
DM factor	3.8
Fit quality	good

Comments:

NGC 3521

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

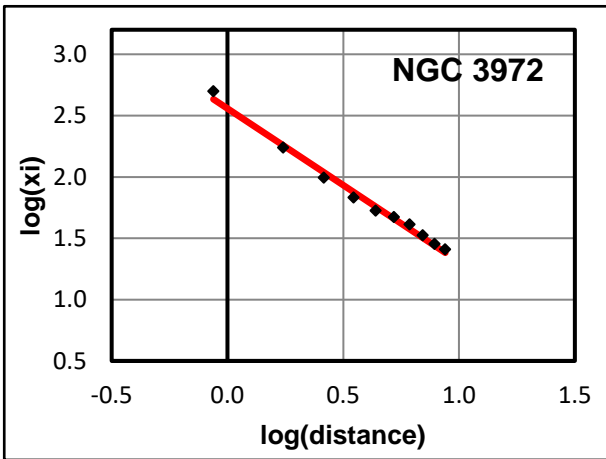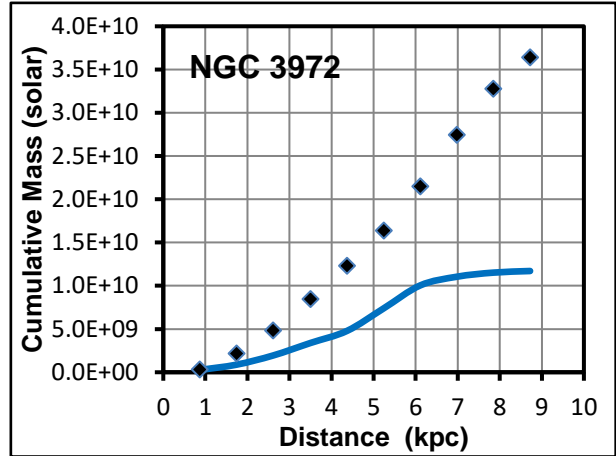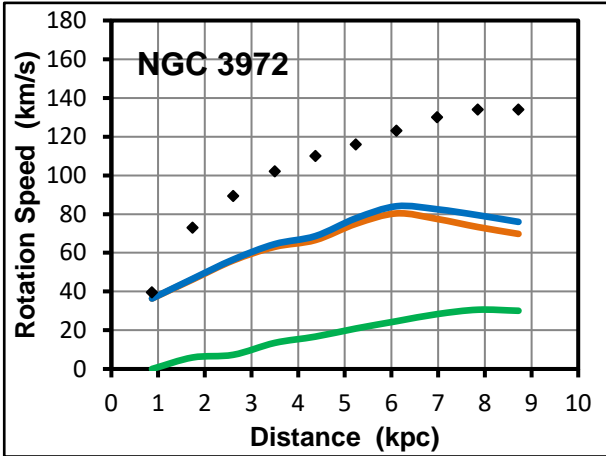| Y, M-to-L	0.30
ξ, slope	-0.70
DM factor	4.0
Fit quality	good

Comments:

NGC 3726

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

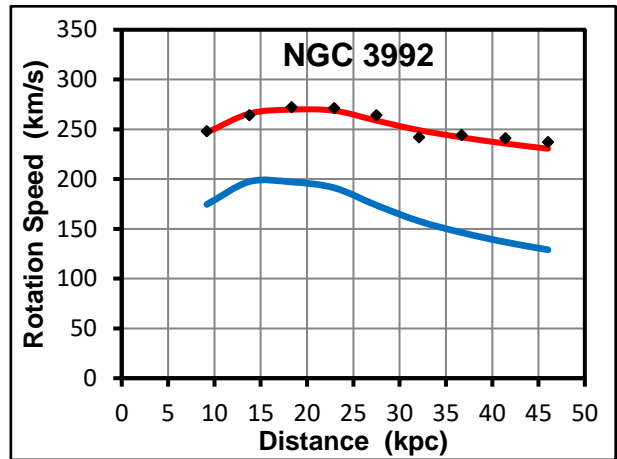| Y, M-to-L	0.31
ξ, slope	-0.99
DM factor	4.7
Fit quality	bumpy

Comments:

NGC 3741

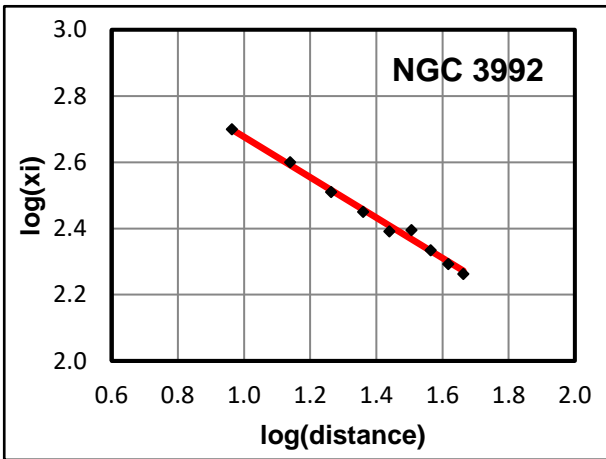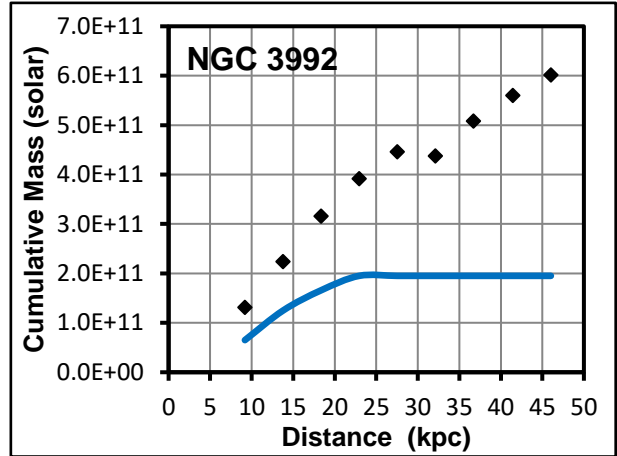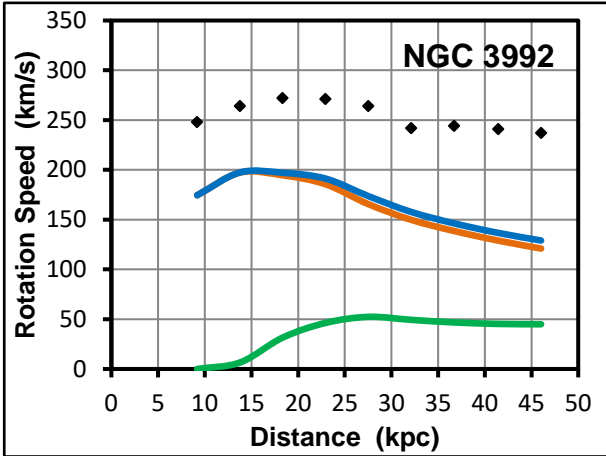
Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

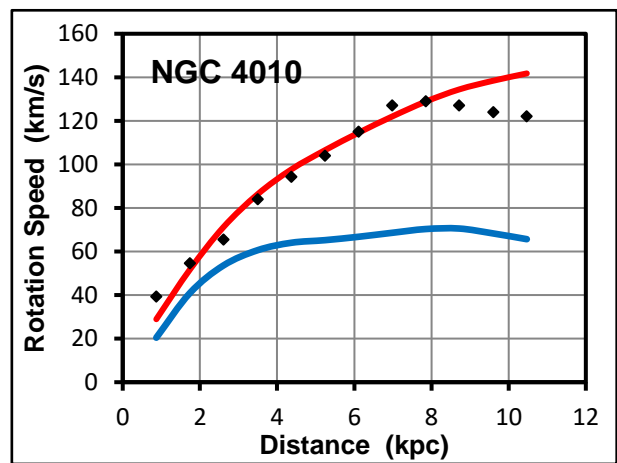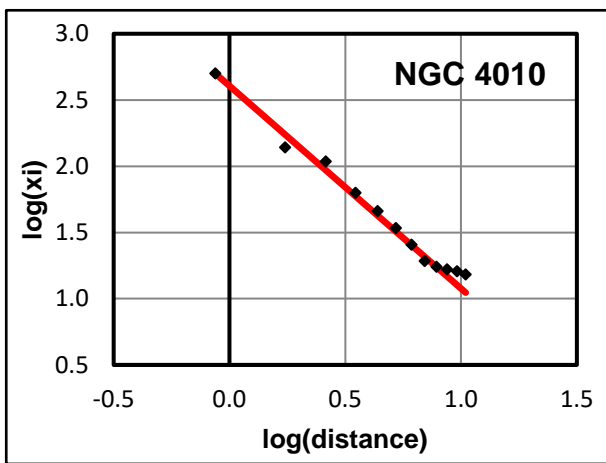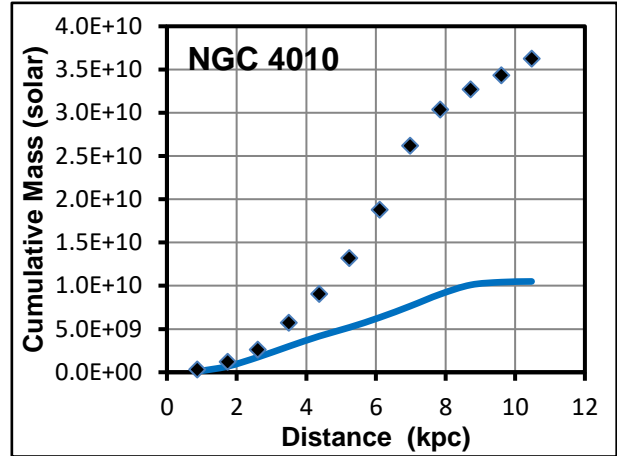| Y, M-to-L	0.55
ξ, slope	-1.62
DM factor	13.2
Fit quality	good

Comments:

NGC 3769

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

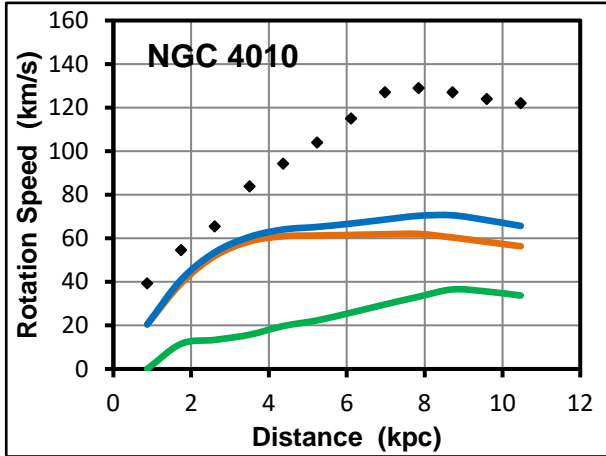|	
Υ, M-to-L	0.28
ξ, slope	-0.95
DM factor	6.9
Fit quality	poor

Comments:

NGC 3893
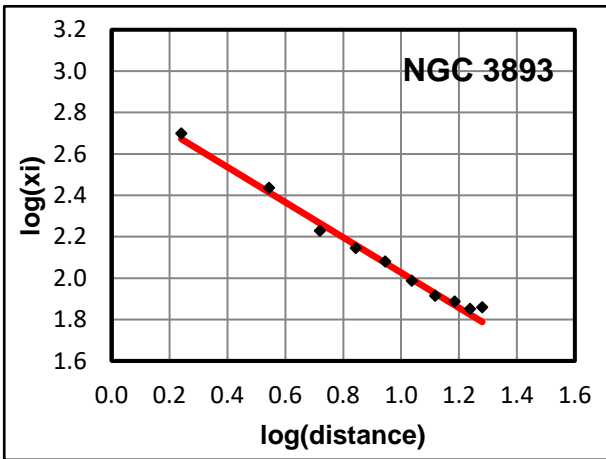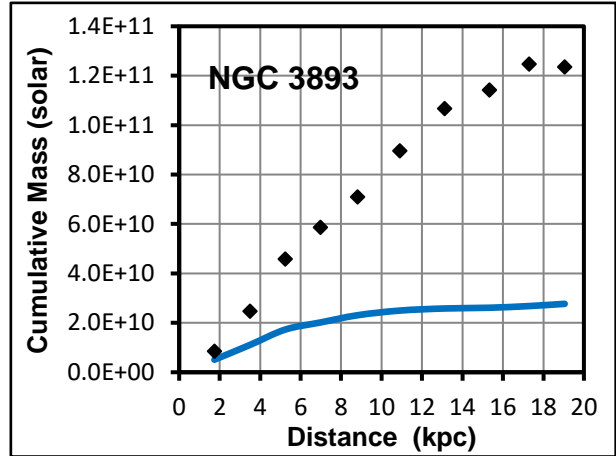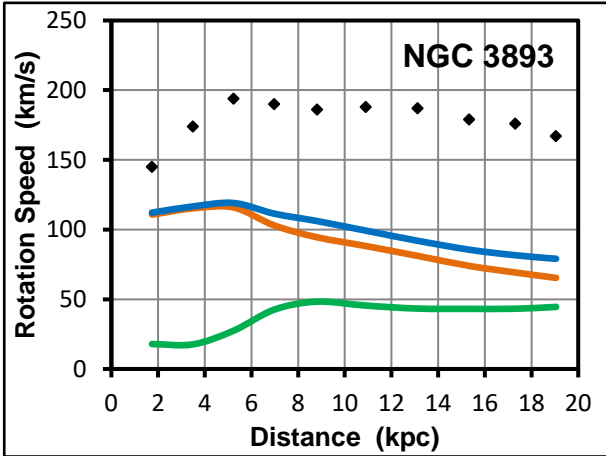
Top left: rotation curve from SPARC data
Top right: cumulative mass
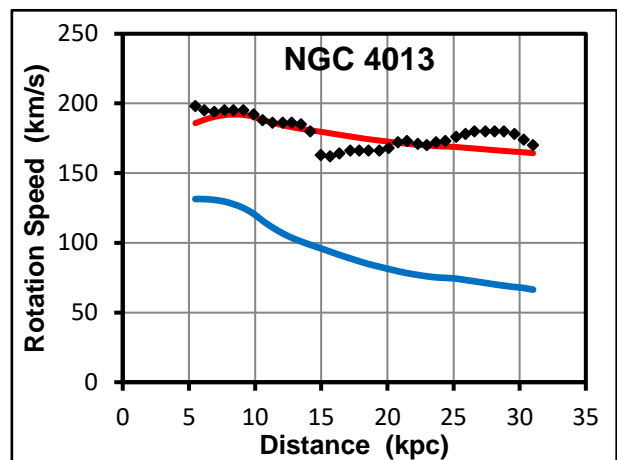Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Υ, M-to-L	0.30
ξ, slope	-0.85
DM factor	3.5
Fit quality	poor

Comments:

NGC 3917

Top left: rotation curve from SPARC data
Top right: cumulative mass
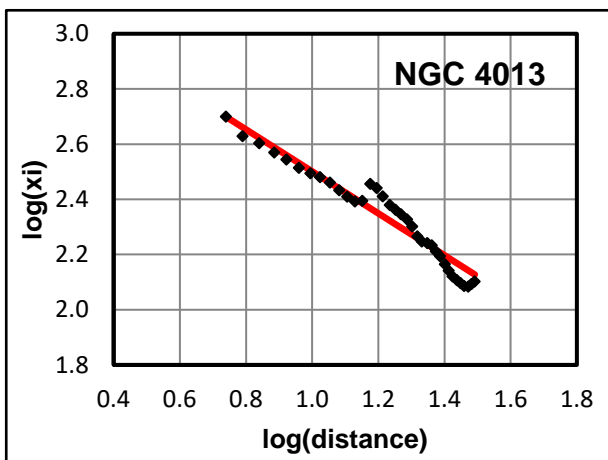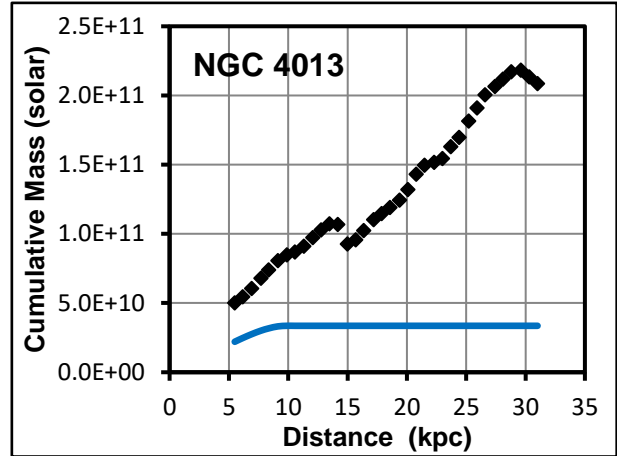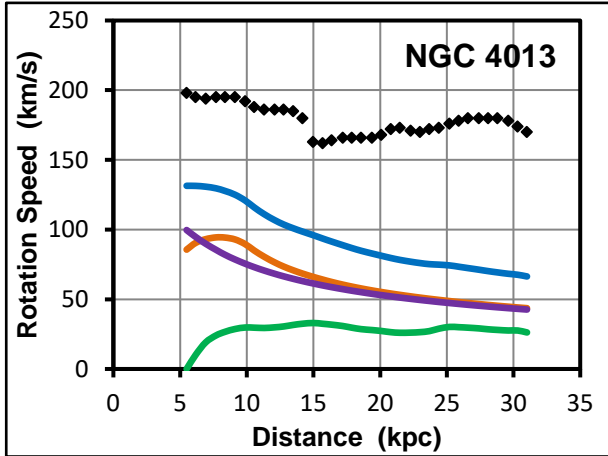Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

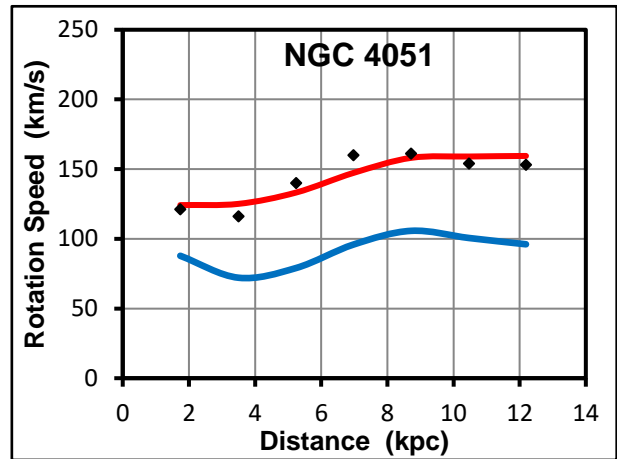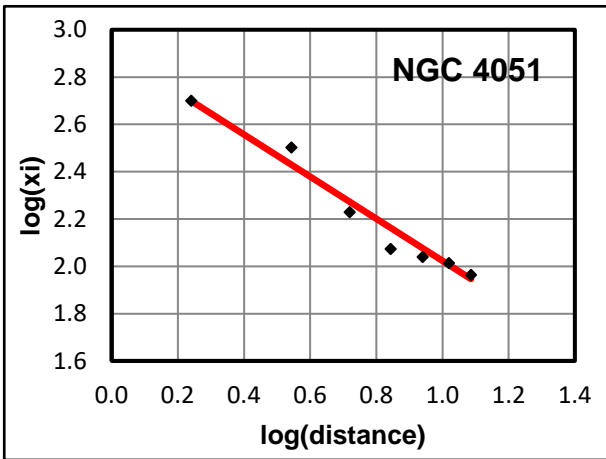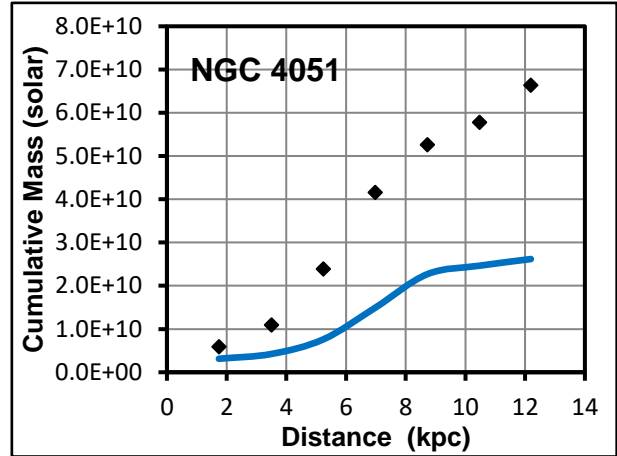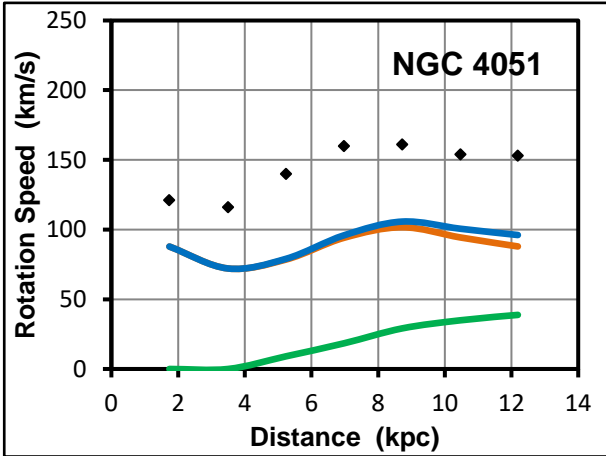| Y, M-to-L	1.17
ξ, slope	-0.53
DM factor	0.8
Fit quality	OK

Comments:

NGC 3953

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

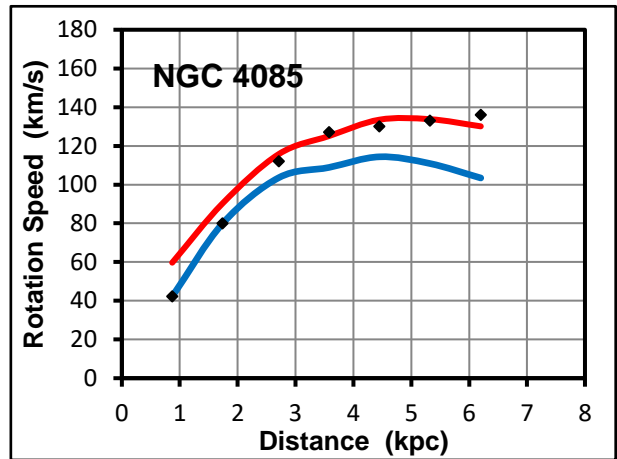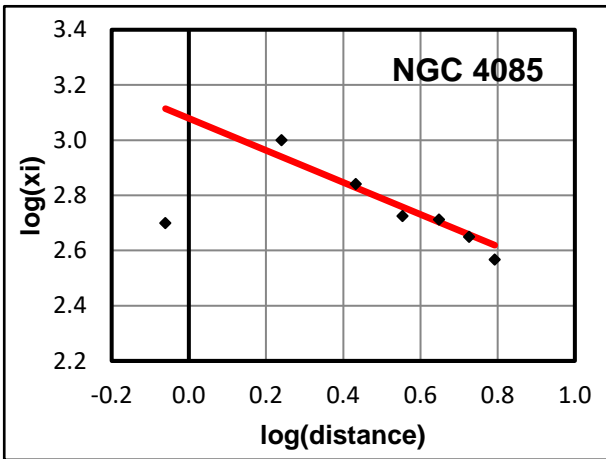| Y, M-to-L	0.43
ξ, slope	-0.66
DM factor	1.1
Fit quality	OK

Comments:

NGC 3972

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

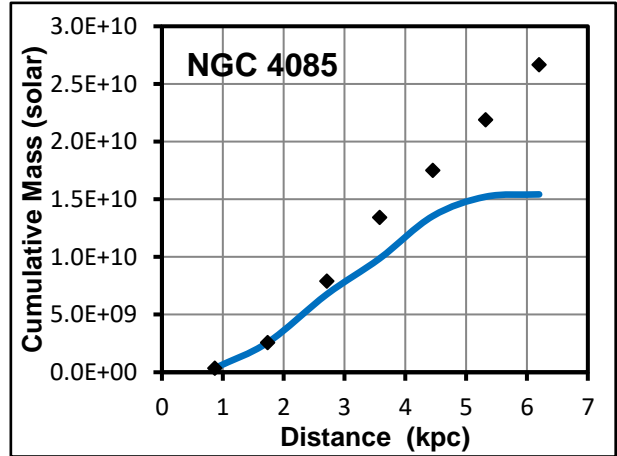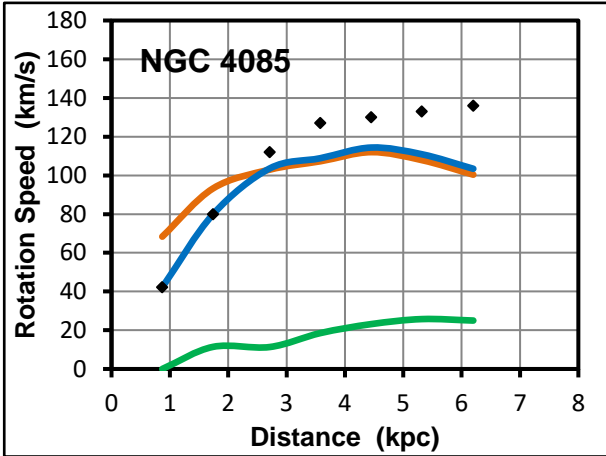| Y, M-to-L	0.57
ξ, slope	-1.25
DM factor	2.1
Fit quality	OK

Comments:

NGC 3992

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

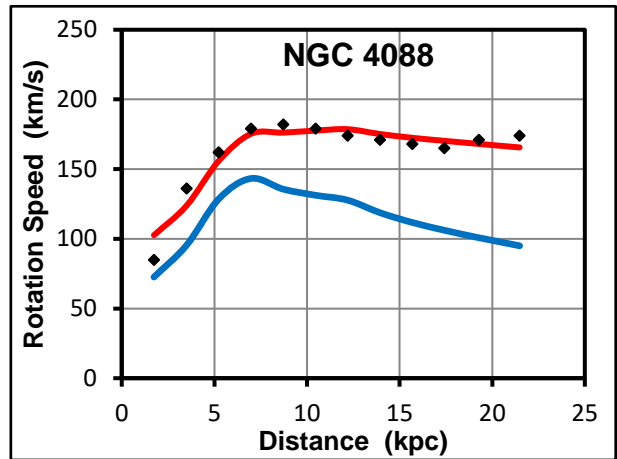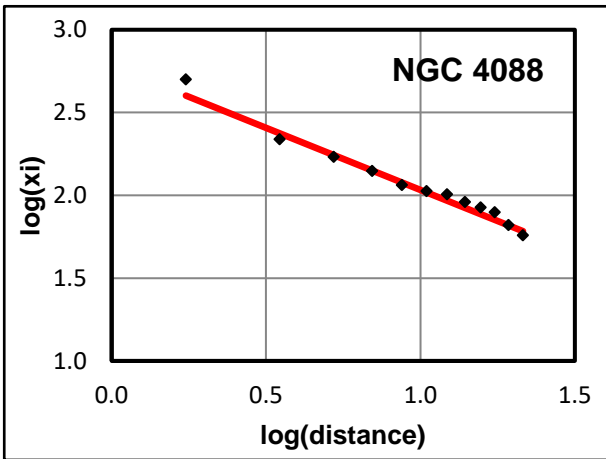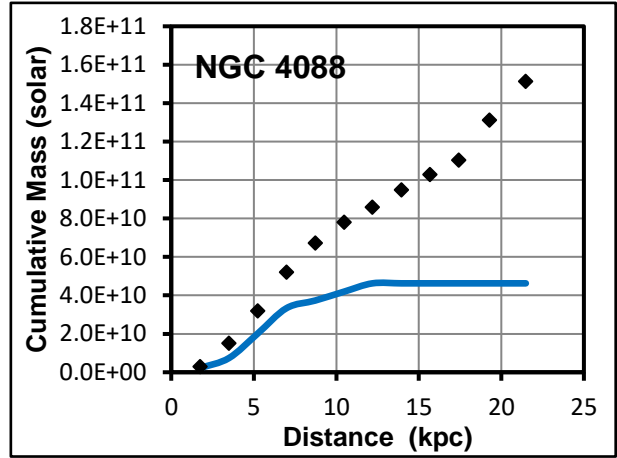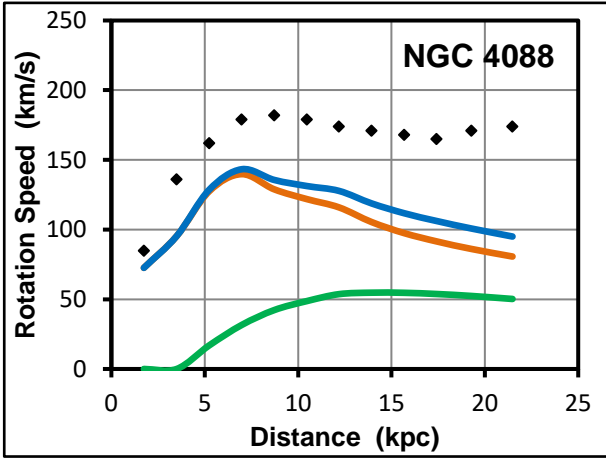| Y, M-to-L	0.64
ξ, slope	-0.61
DM factor	2.1
Fit quality	good

Comments:

NGC 4010

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.39
ξ, slope	-1.53
DM factor	2.5
Fit quality	OK

Comments:
Fit omits the outermost 3 data points; ξ plot (lower left) shows levelling off at large distances.
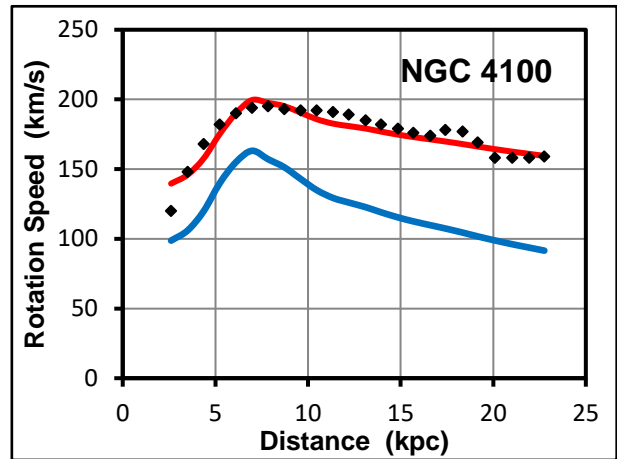
NGC 4013
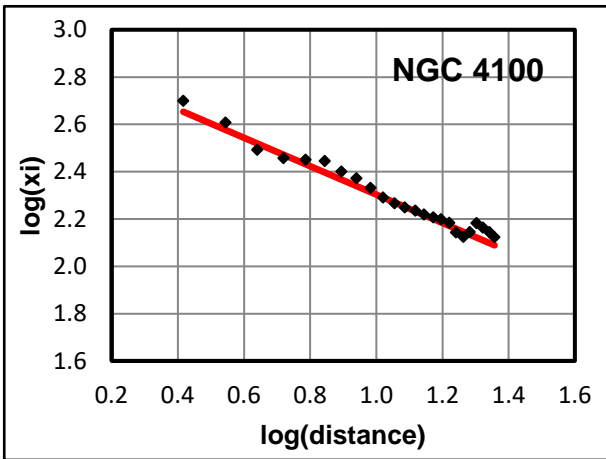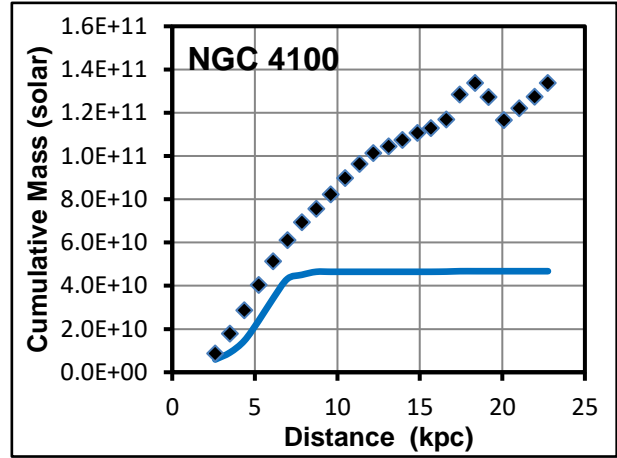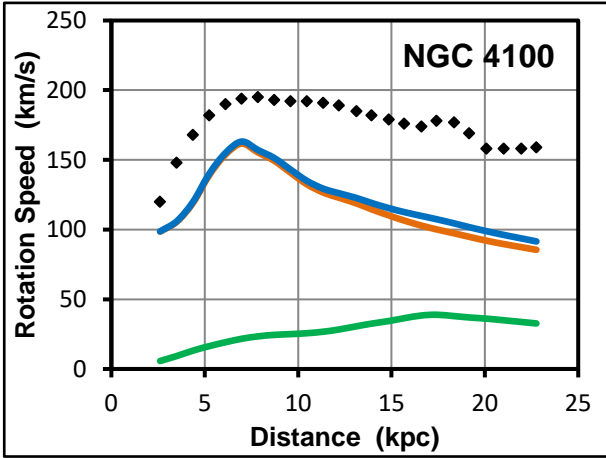

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Bulge, M-to-L	0.85
Disk, M-to-L	0.21
ξ, slope	-0.76
DM factor	5.2
Fit quality	bad

Comments:
Discontinuity in observed data points prevents any chance of a fit to complete curve.
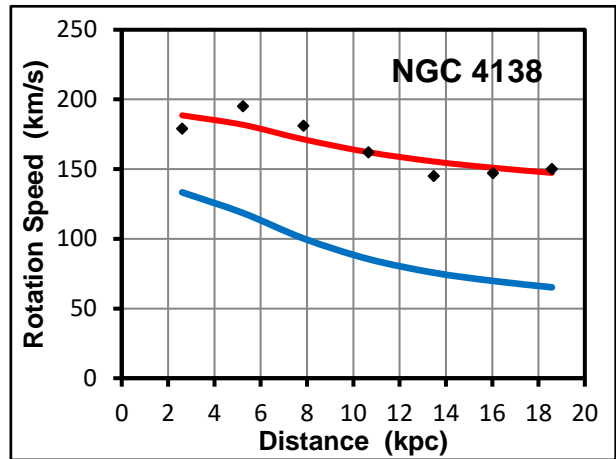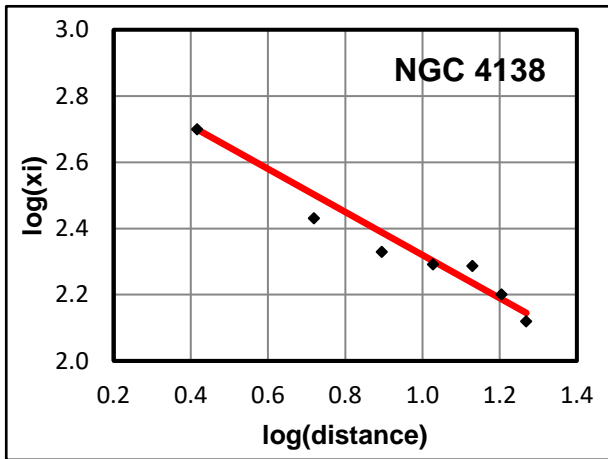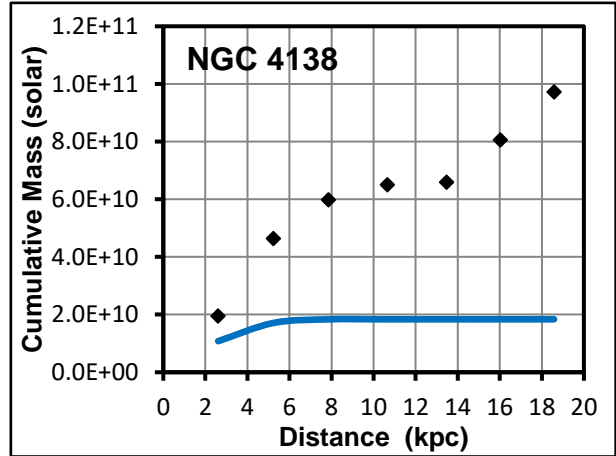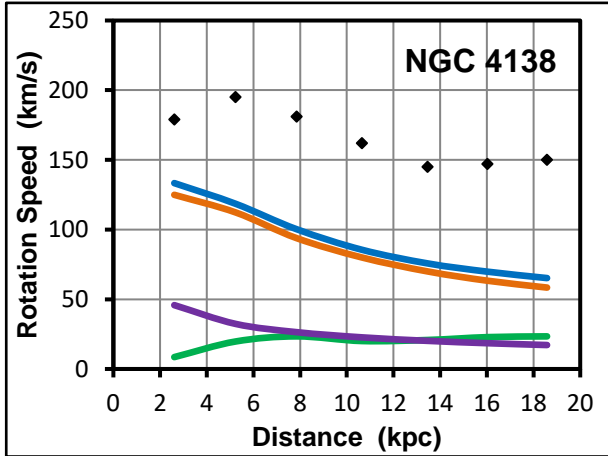
NGC 4051

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

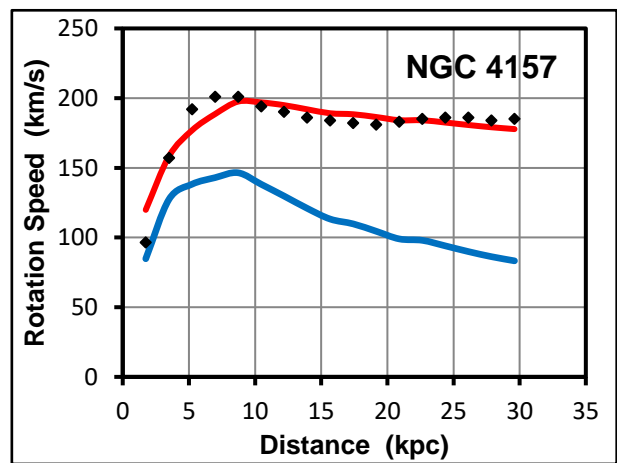|	
Υ, M-to-L	0.27
ξ, slope	-0.89
DM factor	1.5
Fit quality	poor

Comments:

NGC 4085

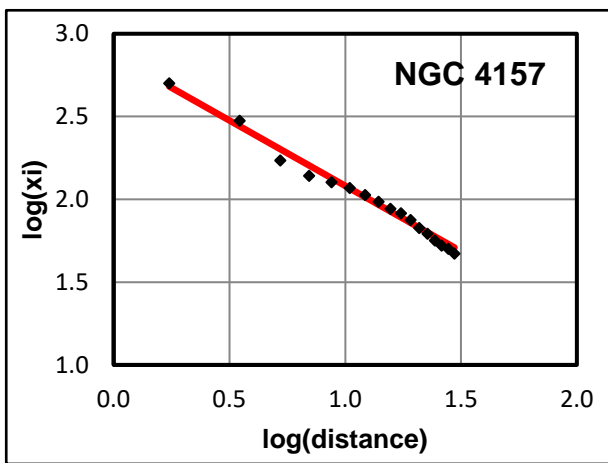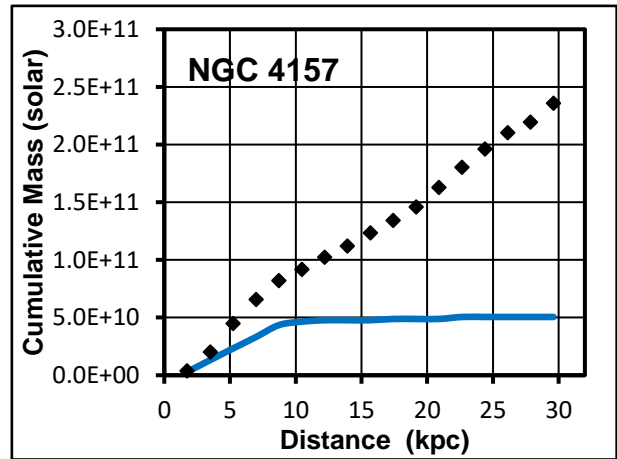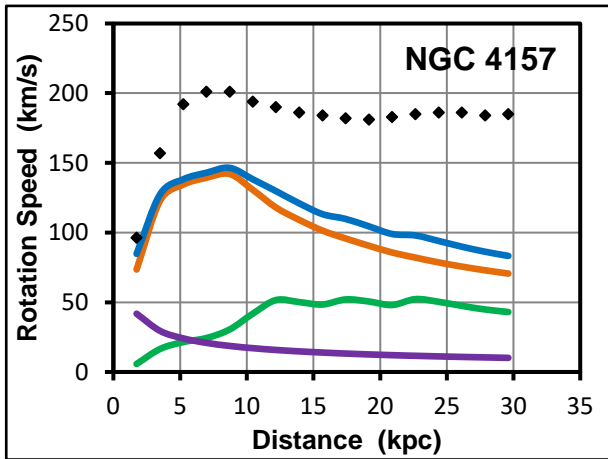Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

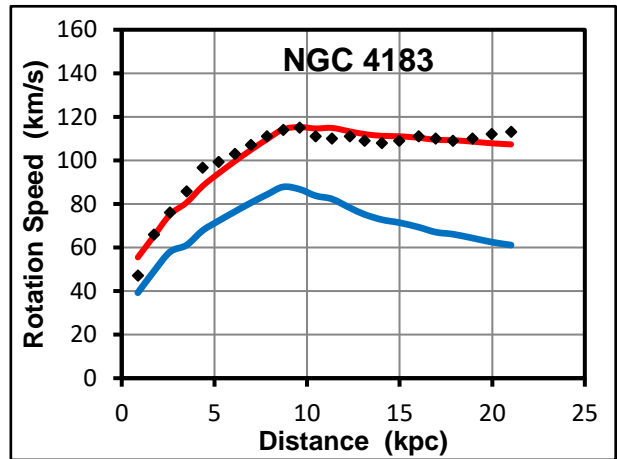| Y, M-to-L	0.52
ξ, slope	-0.58
DM factor	0.7
Fit quality	poor

Comments:

NGC 4088
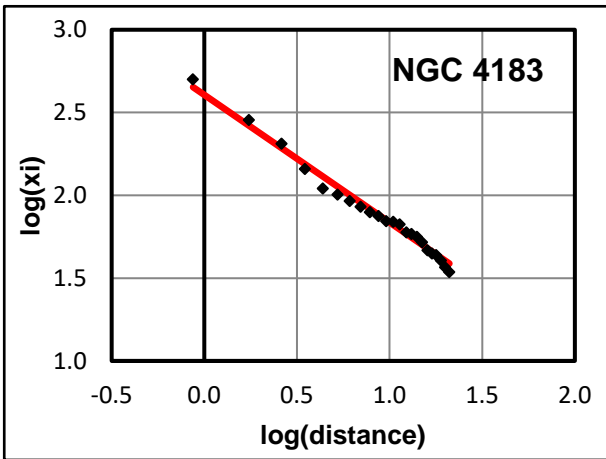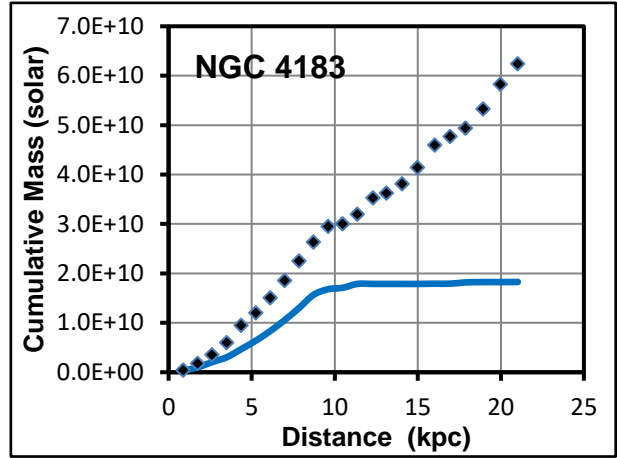

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

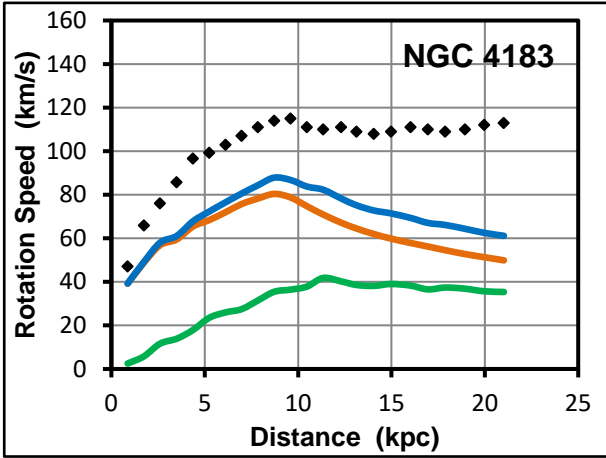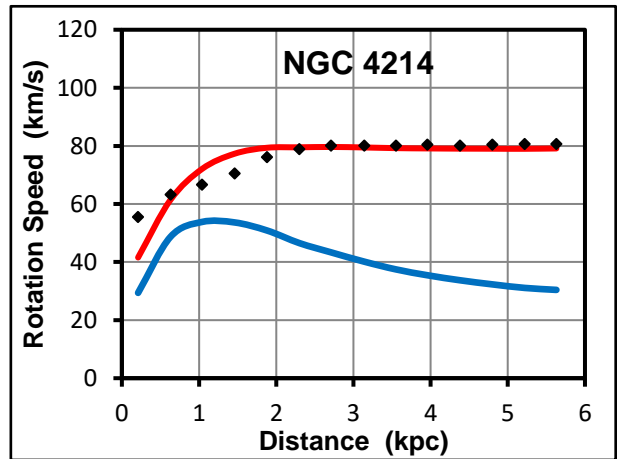|	
Υ, M-to-L	0.28
ξ, slope	-0.75
DM factor	2.3
Fit quality	OK

Comments:

NGC 4100

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

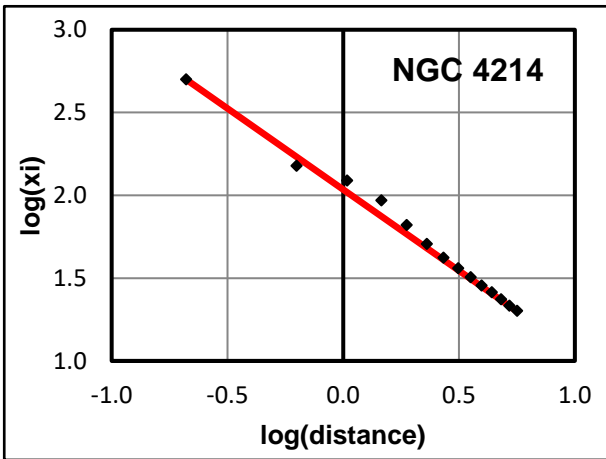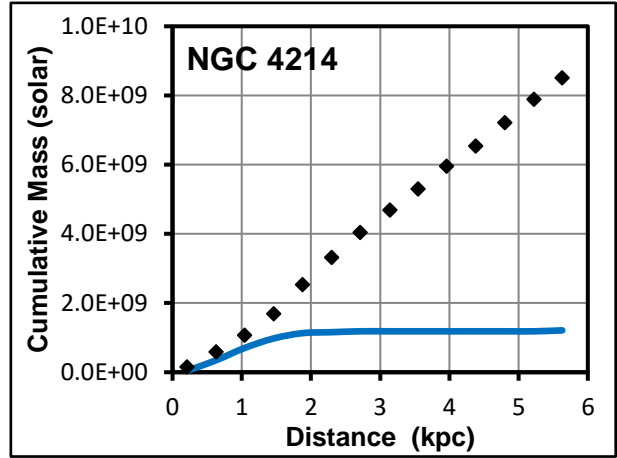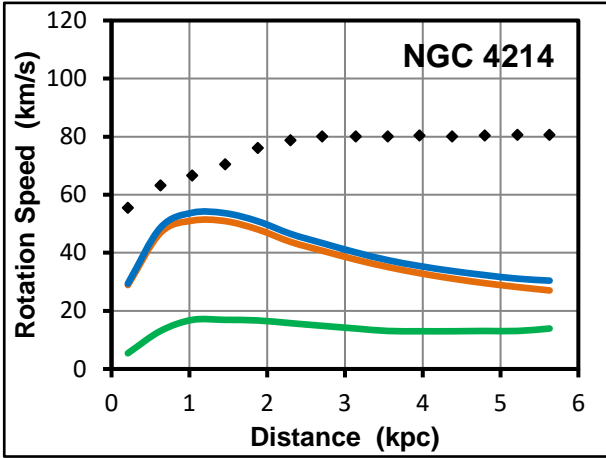| Ɣ, M-to-L	0.61
ξ, slope	-0.60
DM factor	1.9
Fit quality	OK just

Comments:

NGC 4138

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

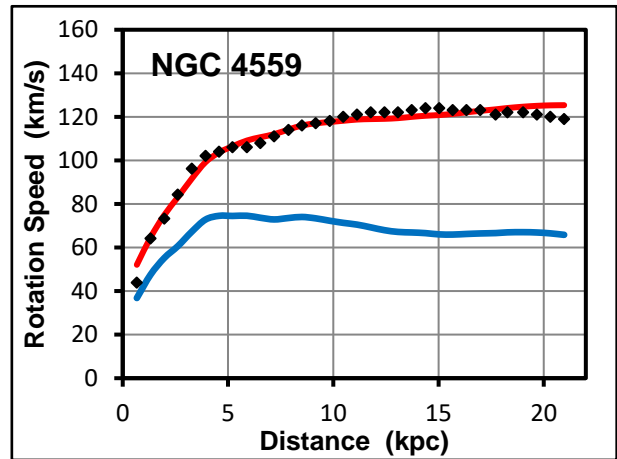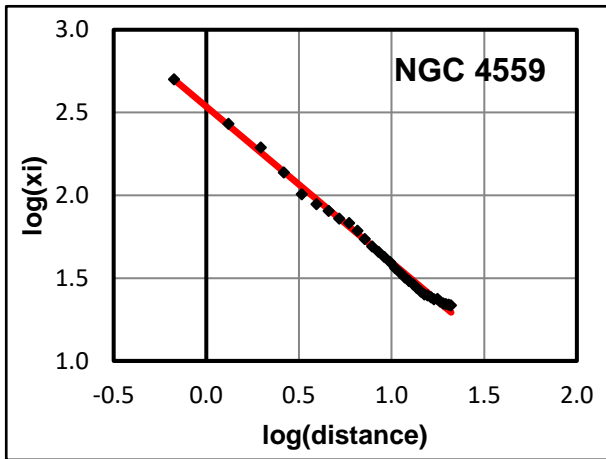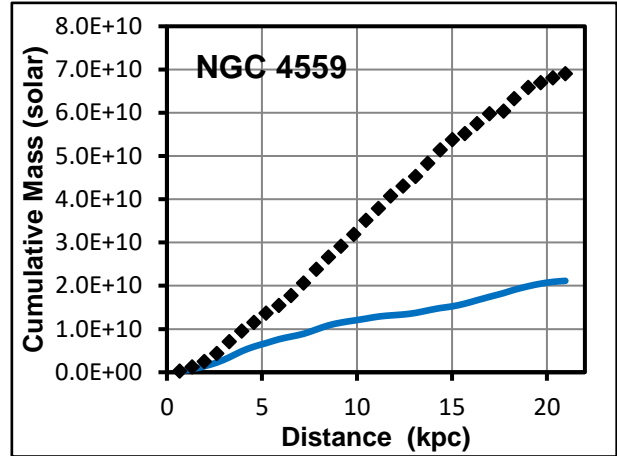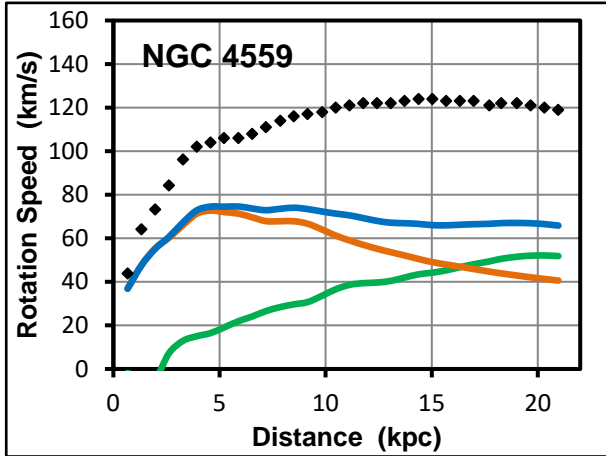|	
Bulge, M-to-L	0.15
Disk, M-to-L	0.40
ξ, slope	-0.76
DM factor	4.3
Fit quality	poor

Comments:

NGC 4157

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

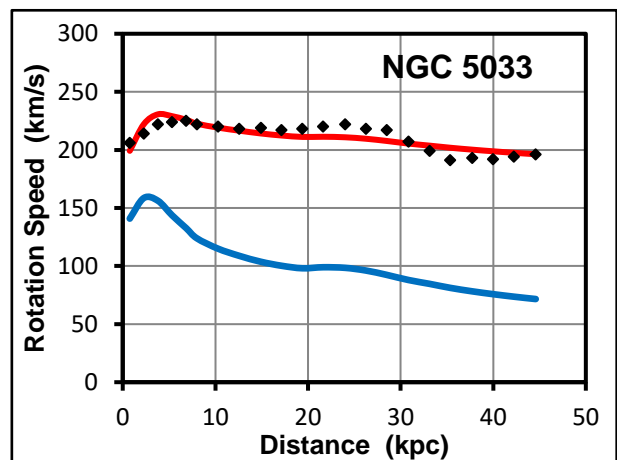|	
Bulge, M-to-L	0.35
Disk, M-to-L	0.32
ξ, slope	-0.79
DM factor	3.7
Fit quality	OK just

Comments:

NGC 4183
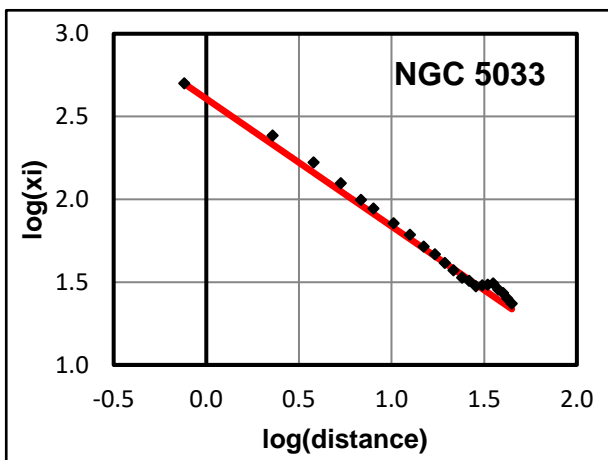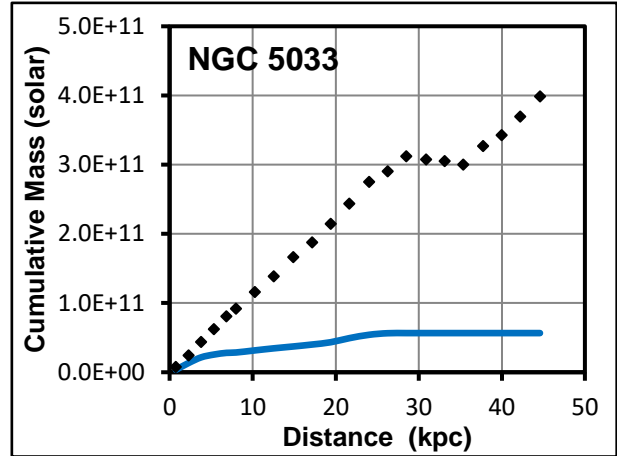
Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

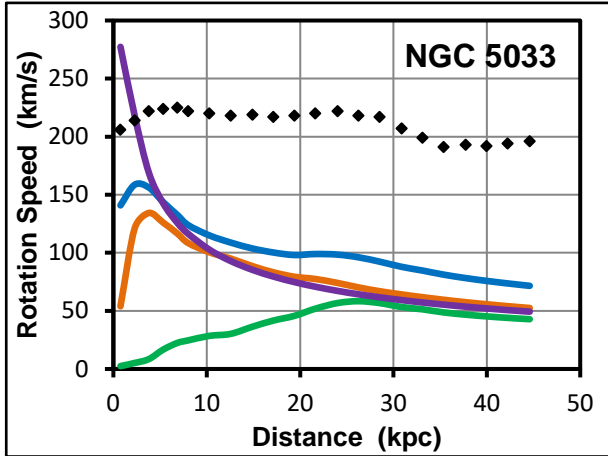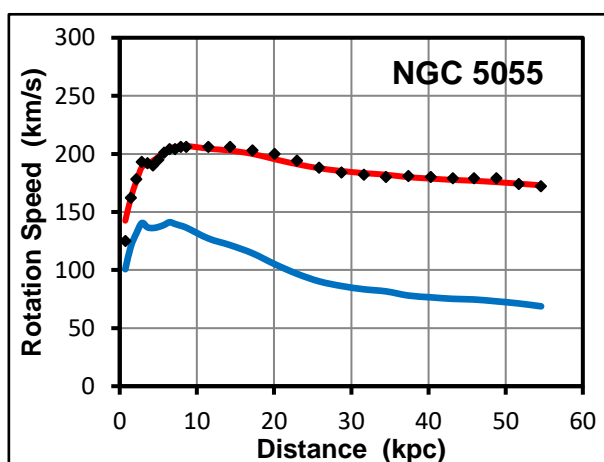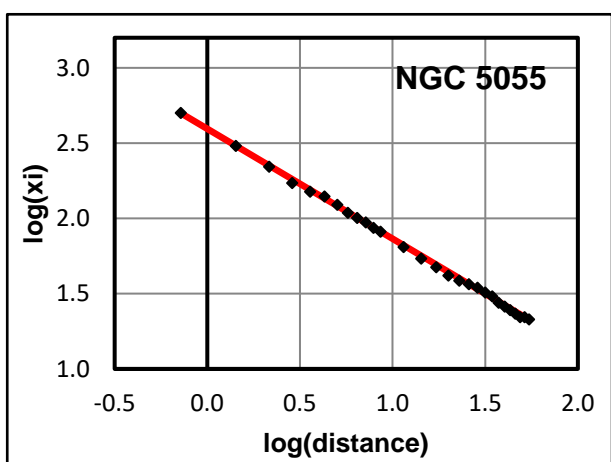|	
Υ, M-to-L	1.00
ξ, slope	-0.77
DM factor	2.4
Fit quality	OK

Comments:

NGC 4214

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

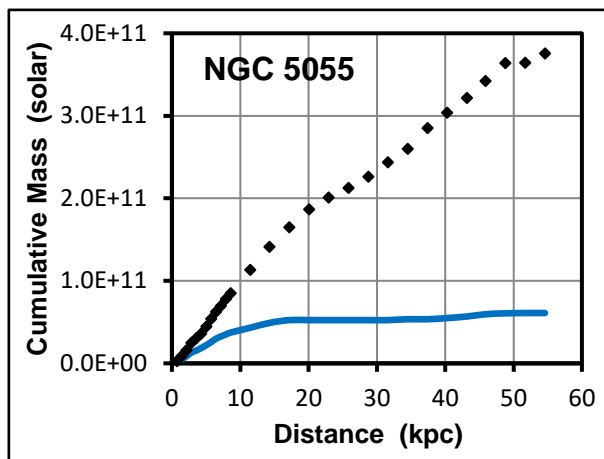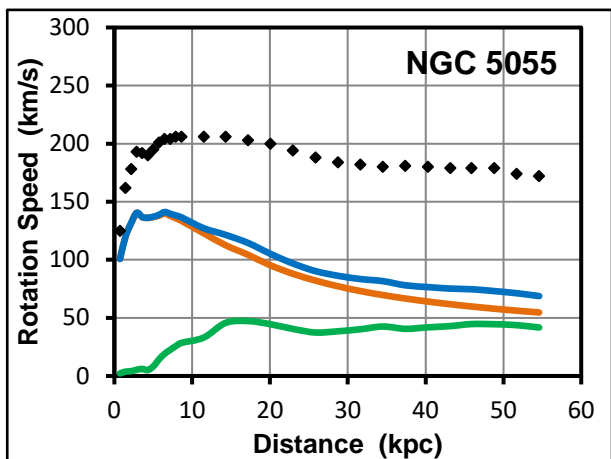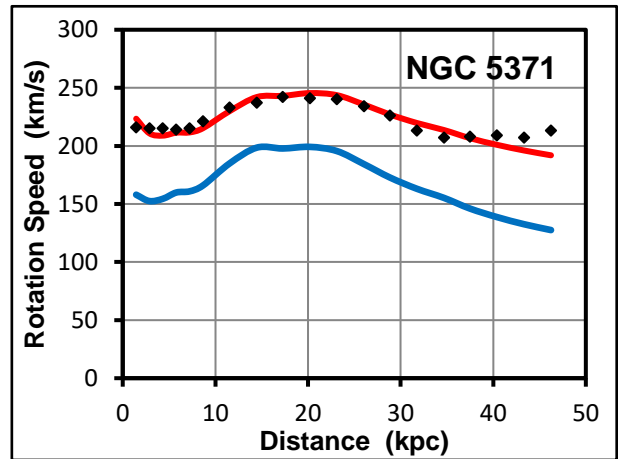| Y, M-to-L	0.80
ξ, slope	-0.98
DM factor	6.0
Fit quality	OK

Comments:

NGC 4559

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.39
ξ, slope	-0.94
DM factor	2.3
Fit quality	OK

Comments:

NGC 5033

Top left: rotation curve from SPARC data
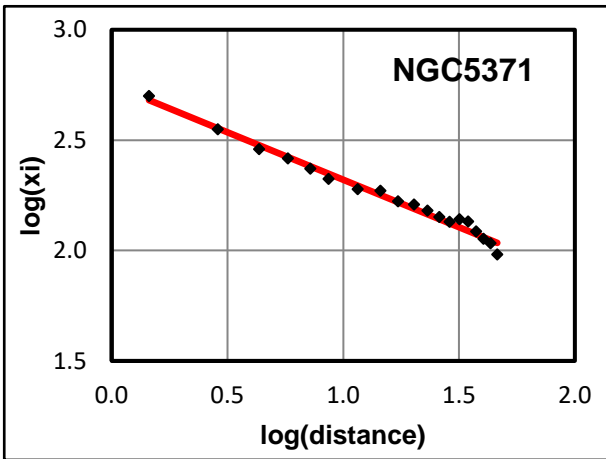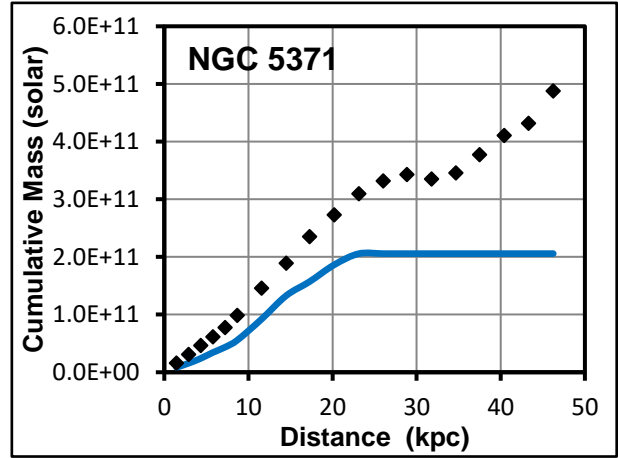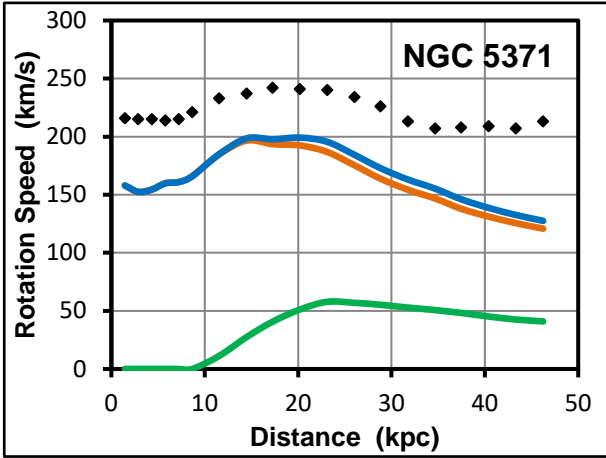Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

|	
Bulge, M-to-L	0.22
Disk, M-to-L	0.32
ξ, slope	-0.77
DM factor	6.0
Fit quality	poor

Comments:

NGC 5055

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

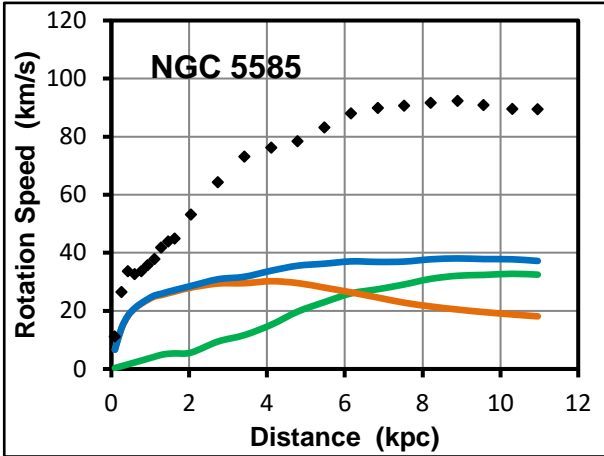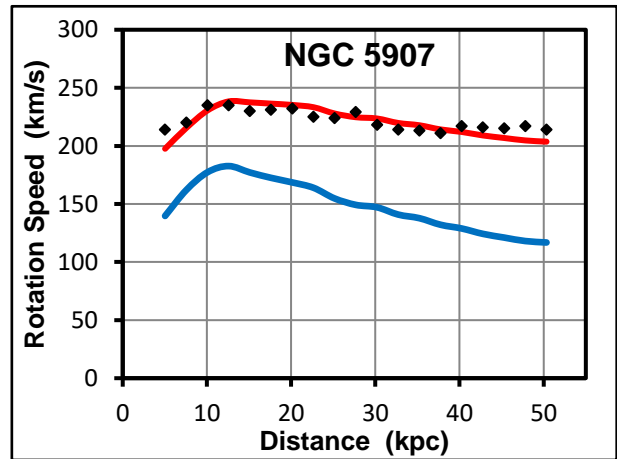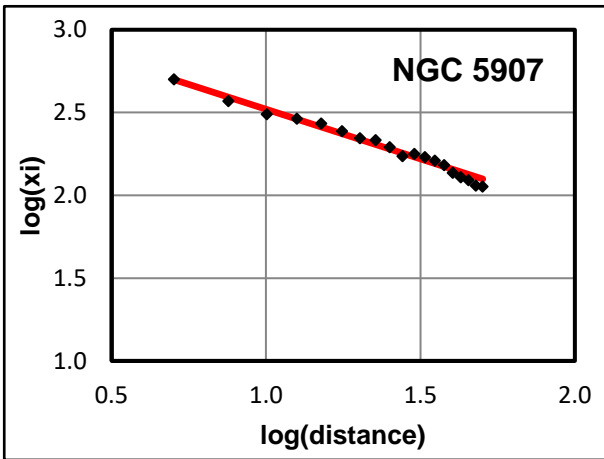| Υ, M-to-L	0.25
ξ, slope	-0.73
DM factor	5.2
Fit quality	good

Comments:

NGC 5371

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.43
ξ, slope	-0.43
DM factor	1.4
Fit quality	good

Comments:
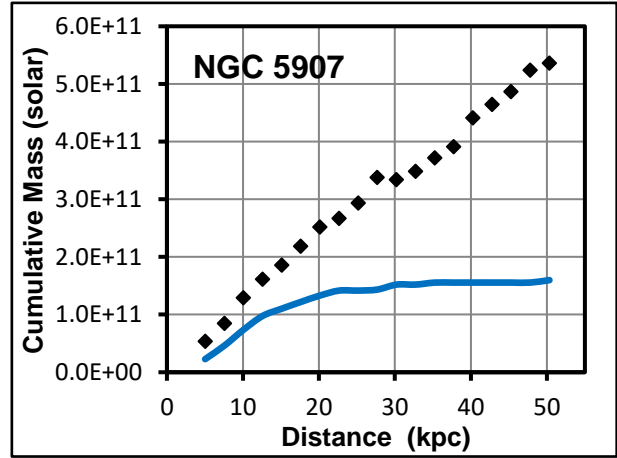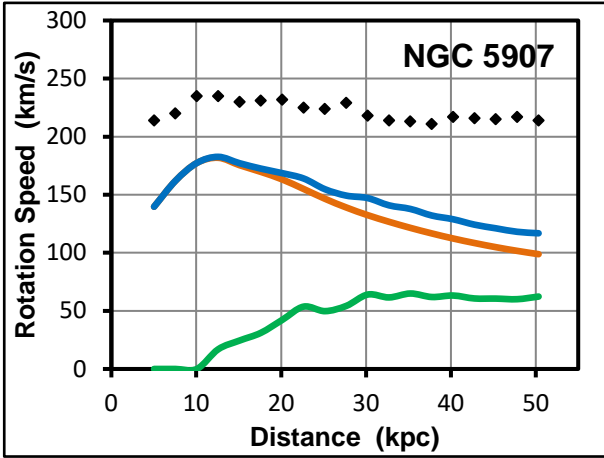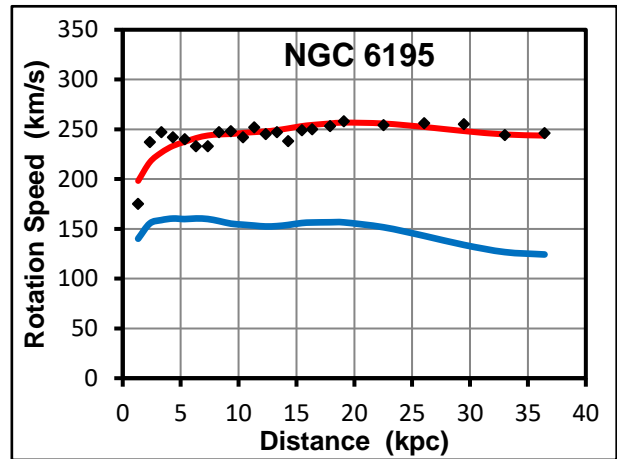Fit pretty good except for the outer regions.

NGC 5585
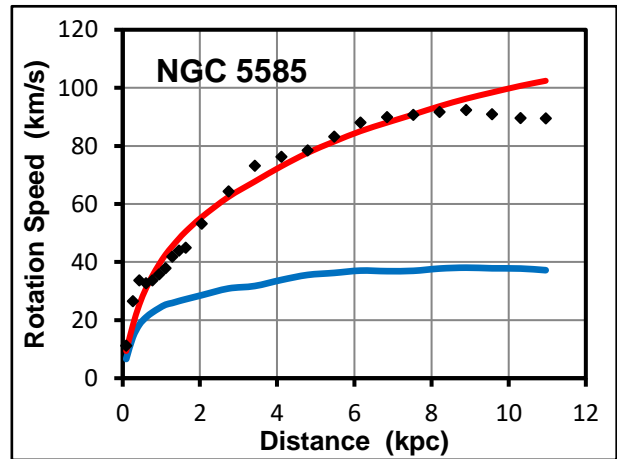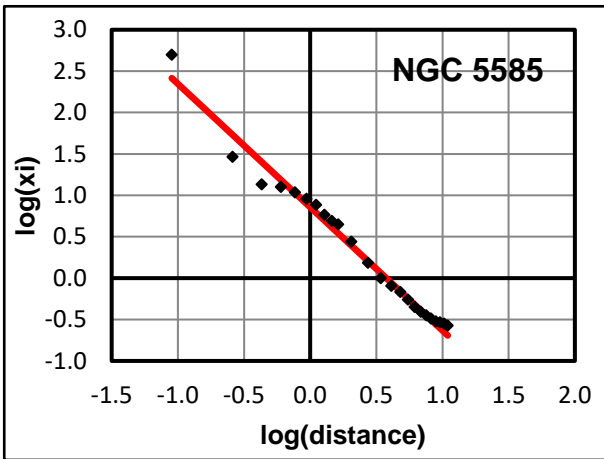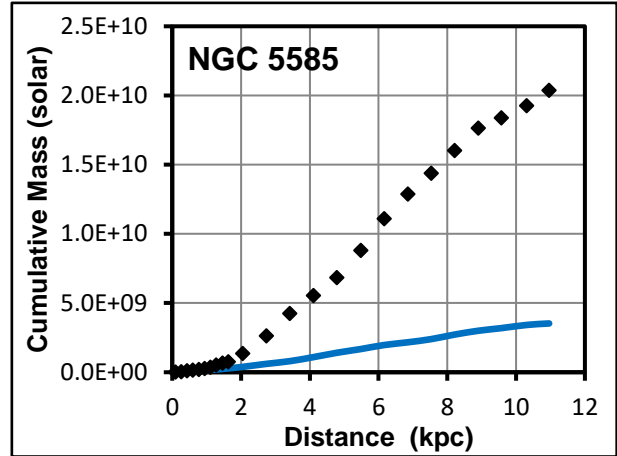
Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Υ, M-to-L	0.27
ξ, slope	-1.49
DM factor	4.8
Fit quality	OK

Comments:
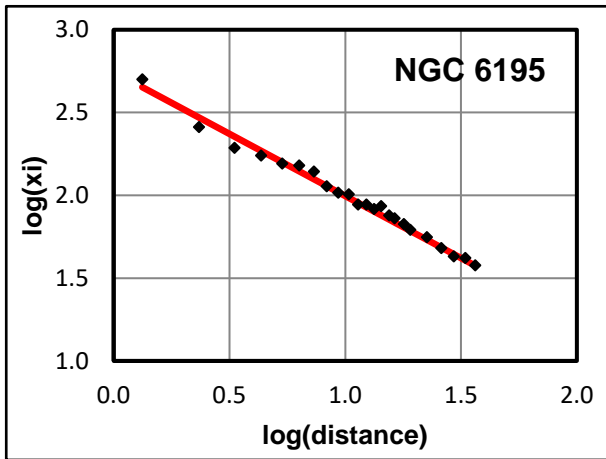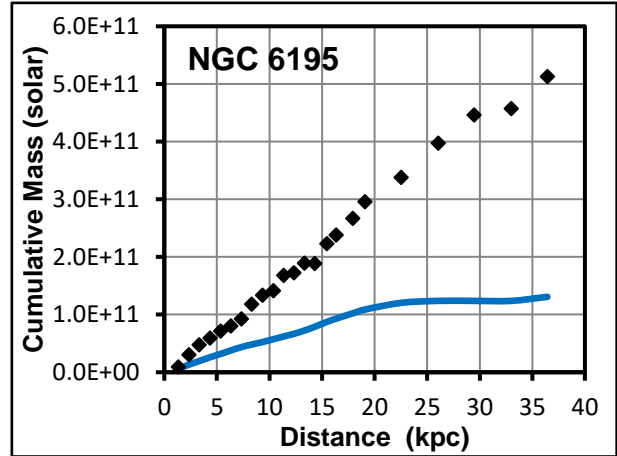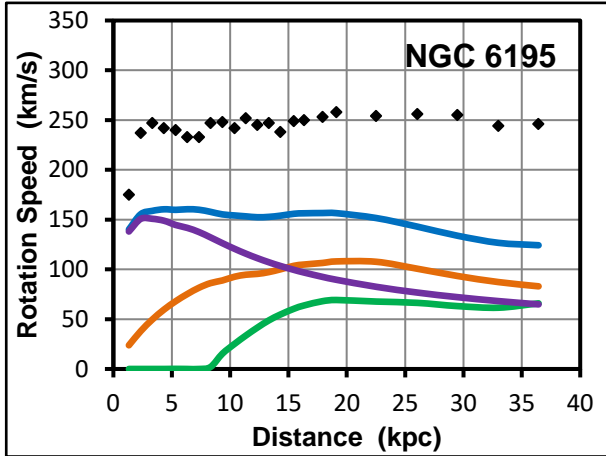Fit omits outermost 3 data points; ξ-function levelling off.

NGC 5907

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

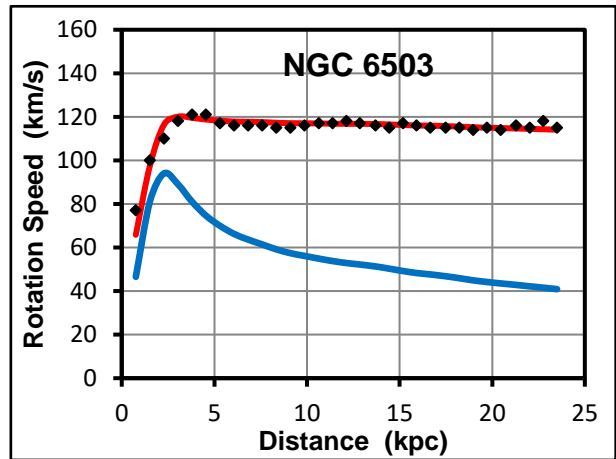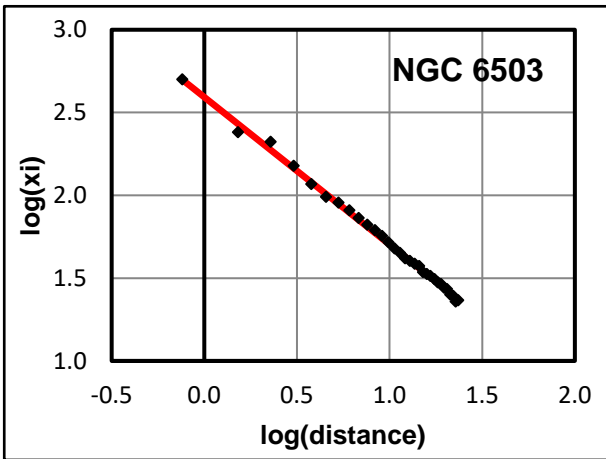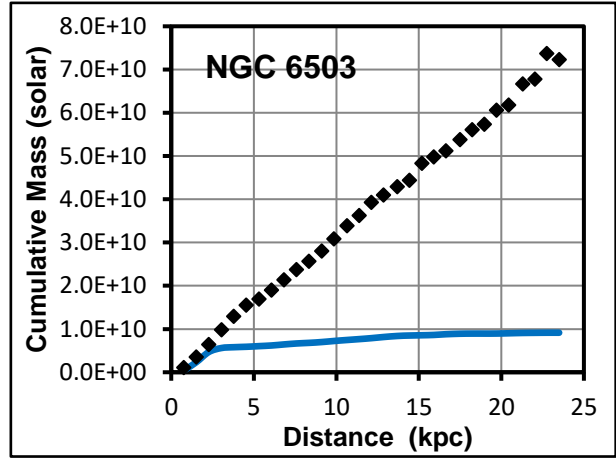| Y, M-to-L	0.61
ξ, slope	-0.61
DM factor	2.4
Fit quality	OK

Comments:

NGC 6195
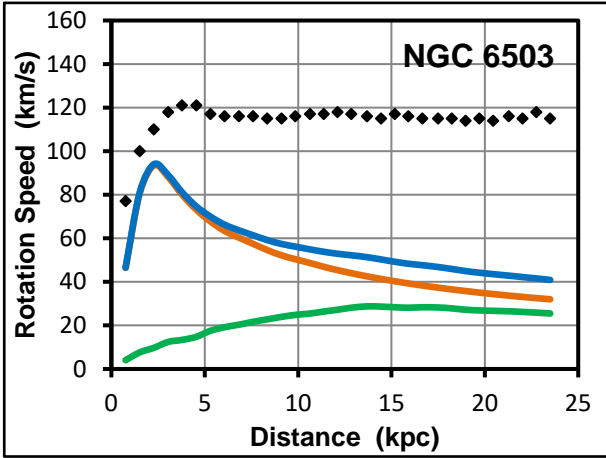

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

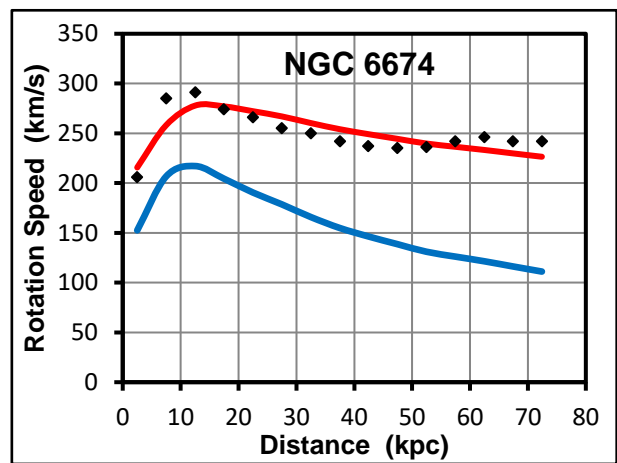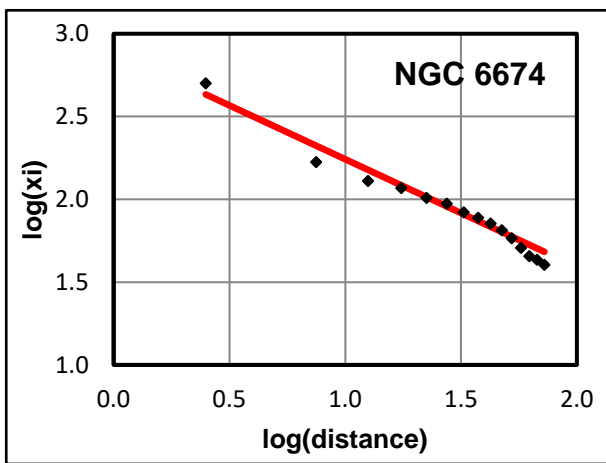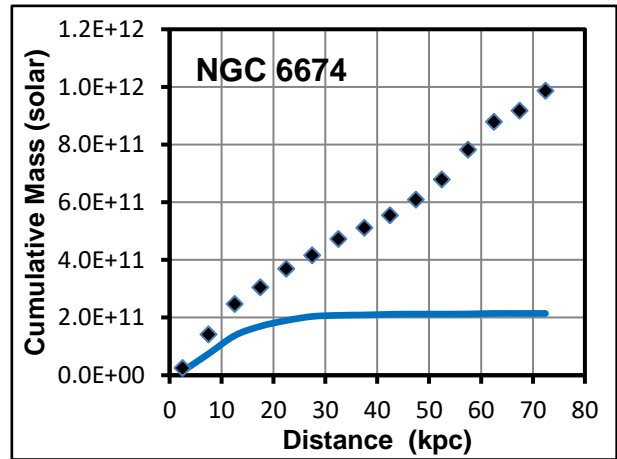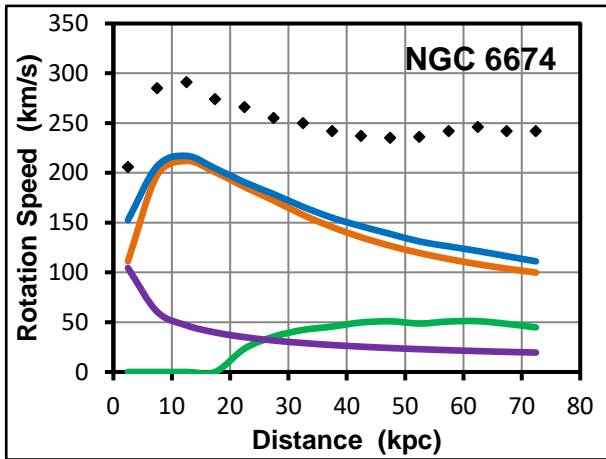|	
Bulge, M-to-L	0.34
Disk, M-to-L	0.20
ξ, slope	-0.75
DM factor	2.9
Fit quality	good

Comments:

NGC 6503

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

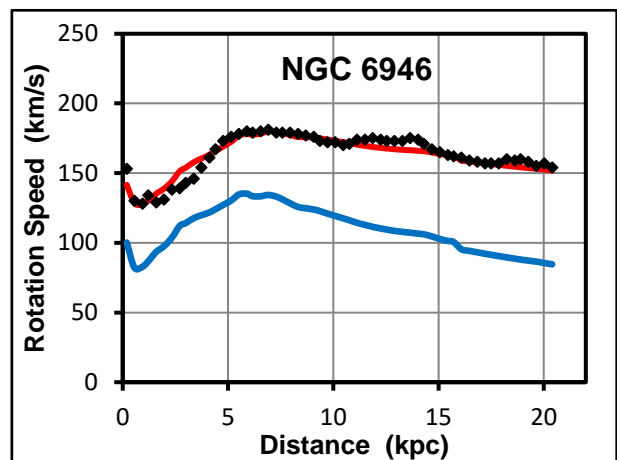|	
Y, M-to-L	0.43
ξ, slope	-0.89
DM factor	6.9
Fit quality	good

Comments:

NGC 6674
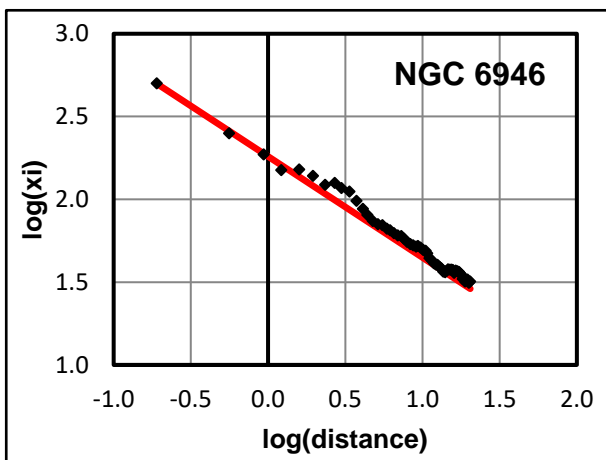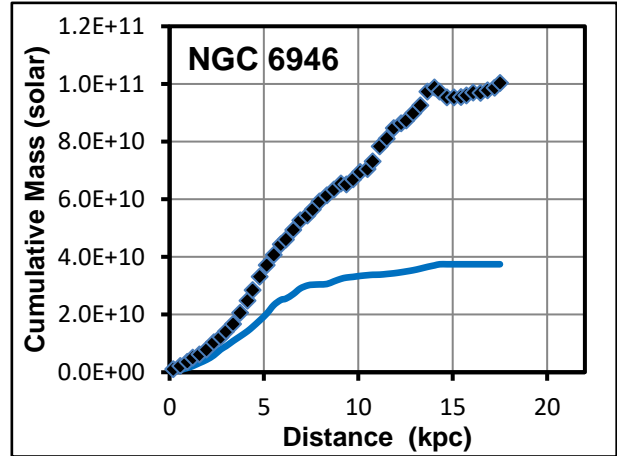

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

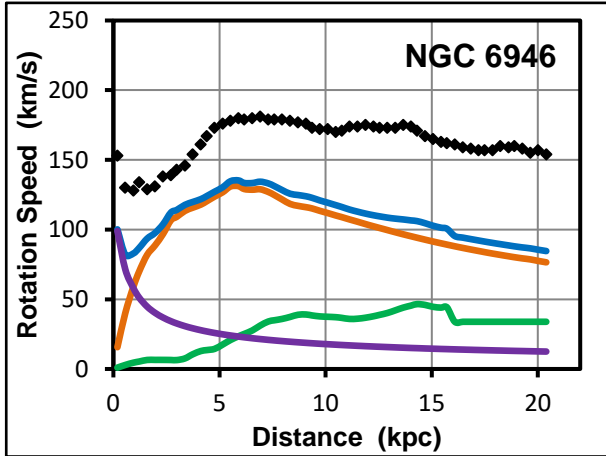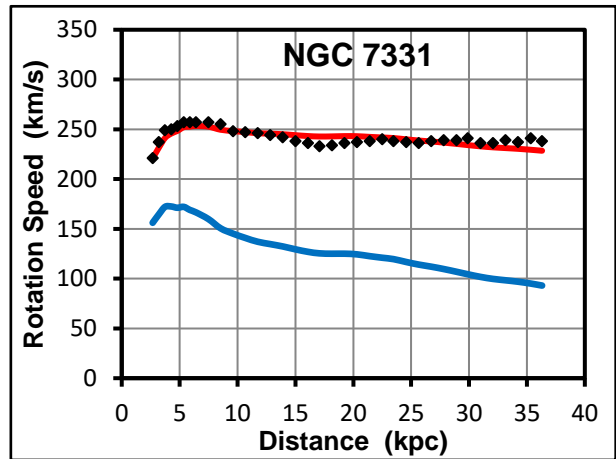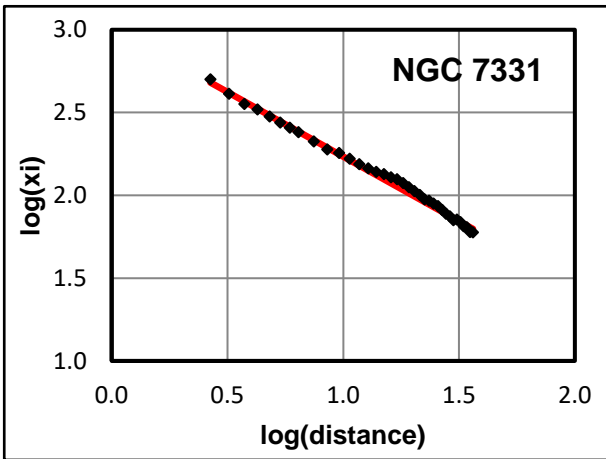|	
Bulge, M-to-L	0.37
Disk, M-to-L	0.82
ξ, slope	-0.65
DM factor	3.6
Fit quality	poor

Comments:

NGC 6946

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Bulge, M-to-L	0.18
Disk, M-to-L	0.41
ξ, slope	-0.61
DM factor	2.0
Fit quality	good

Comments:

NGC 7331
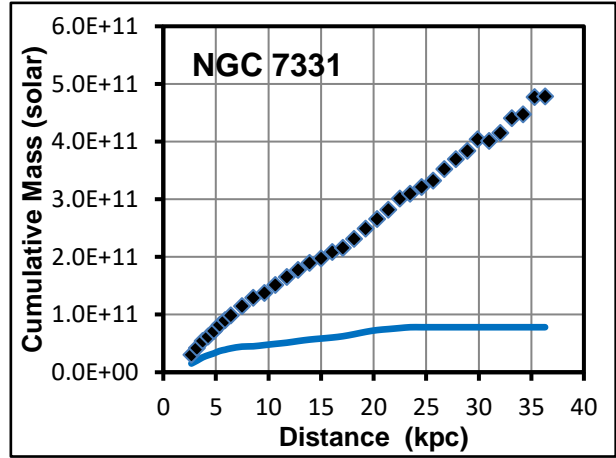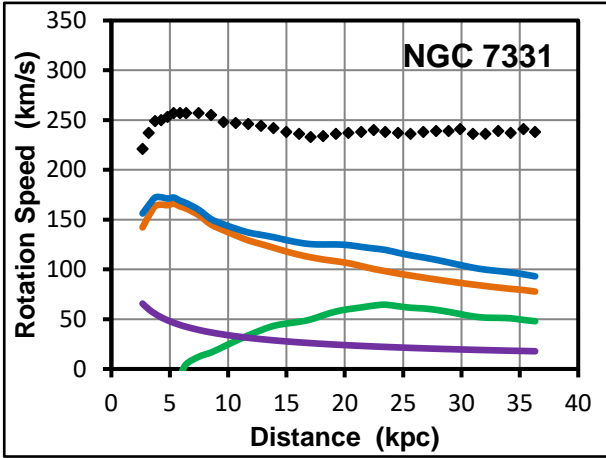
Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

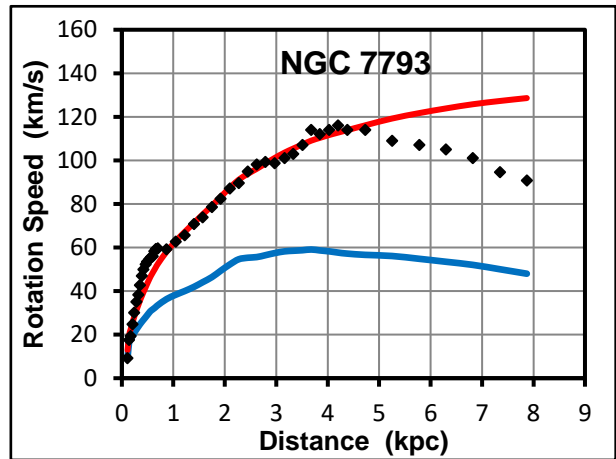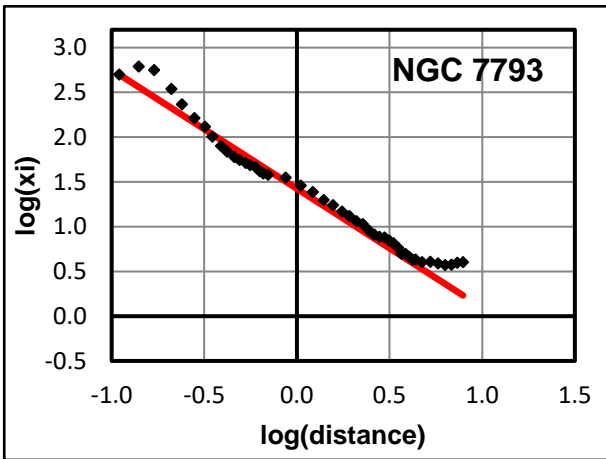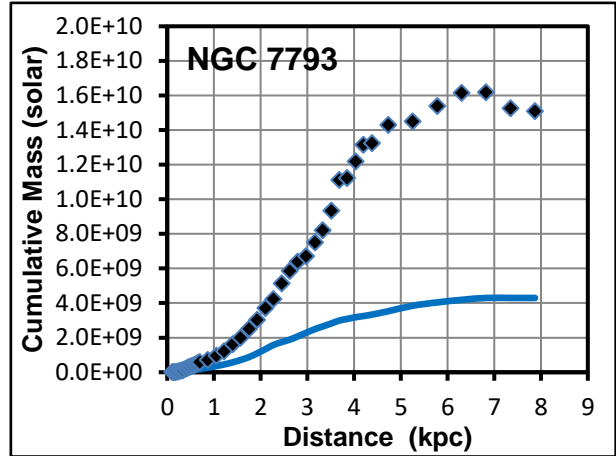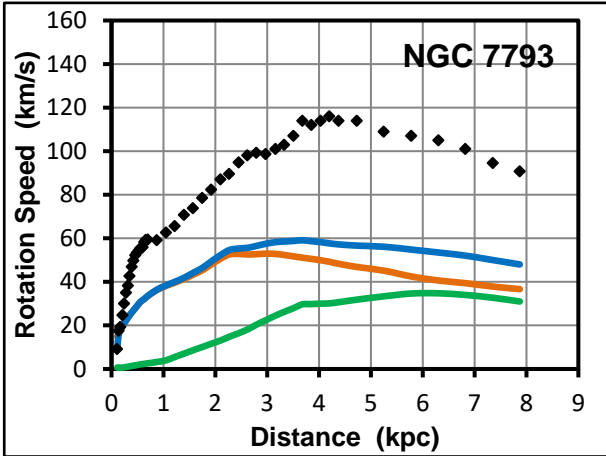|	
Bulge, M-to-L	0.23
Disk, M-to-L	0.20
ξ, slope	-0.78
DM factor	5.1
Fit quality	OK

Comments:

NGC 7793

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	0.30
ξ, slope	-1.33
DM factor	2.5
Fit quality	OK

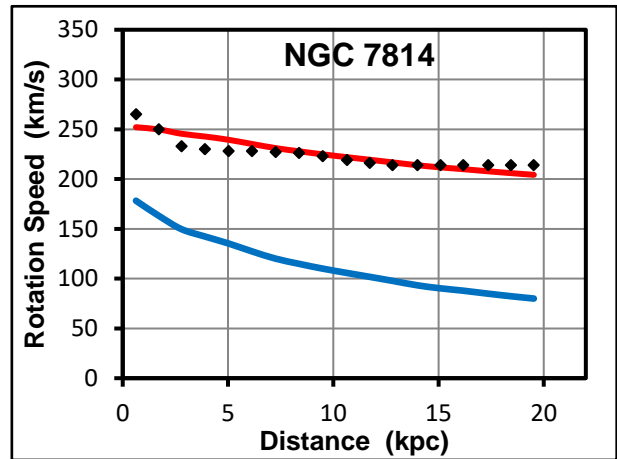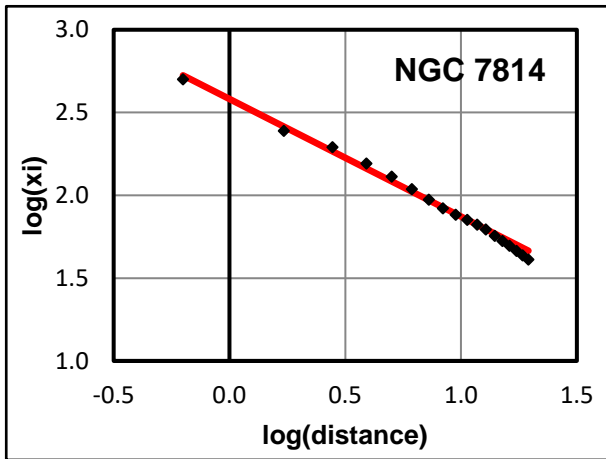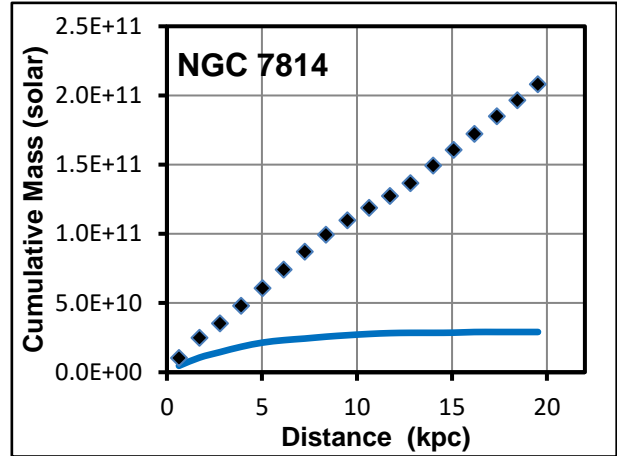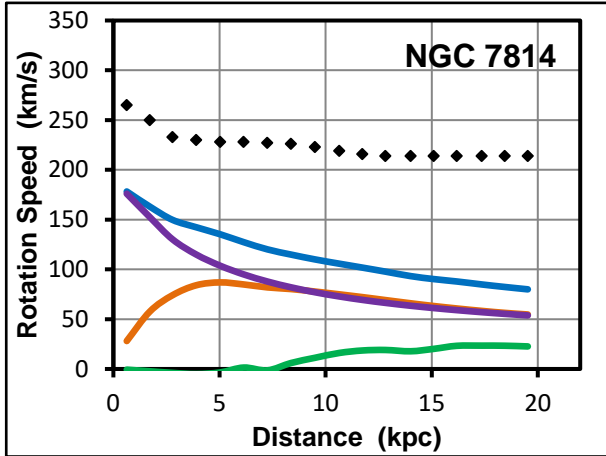Comments:
Fit omits last 6 data points.

NGC 7814

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

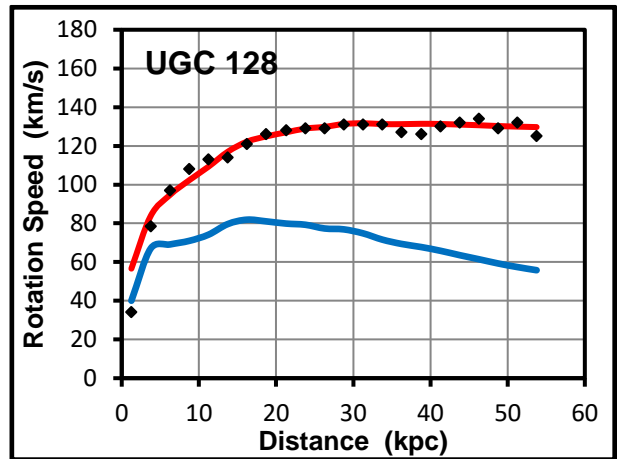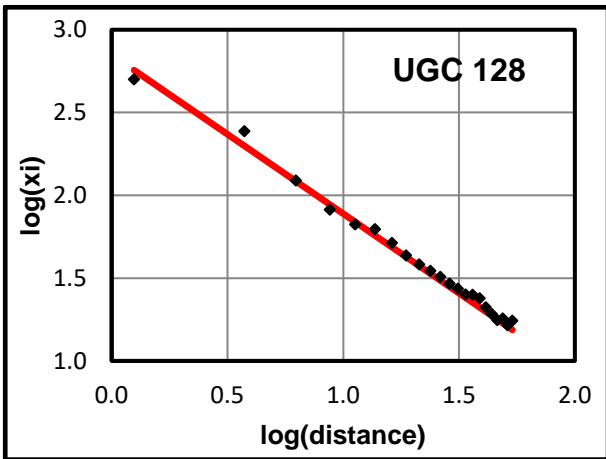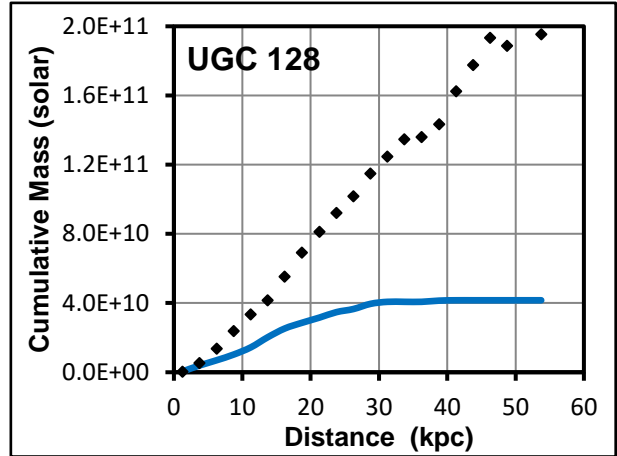|	
Bulge, M-to-L	0.26
Disk, M-to-L	0.50
ξ, slope	-0.71
DM factor	6.2
Fit quality	good

Comments:

UGC 128

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

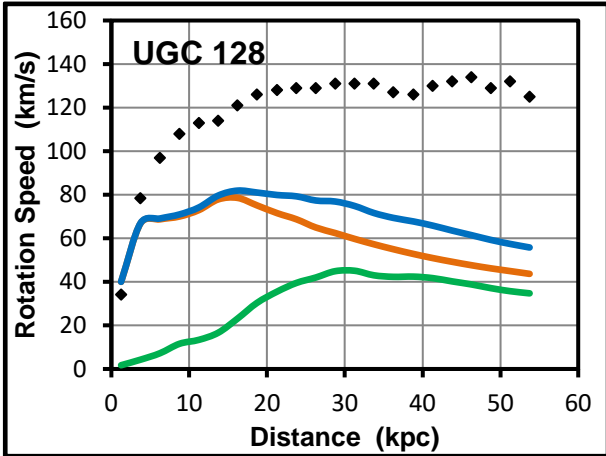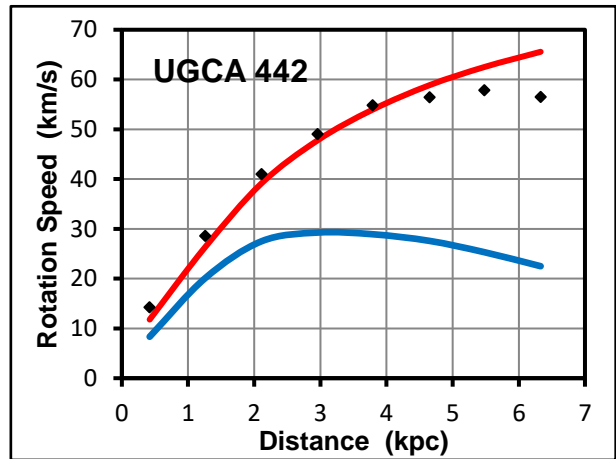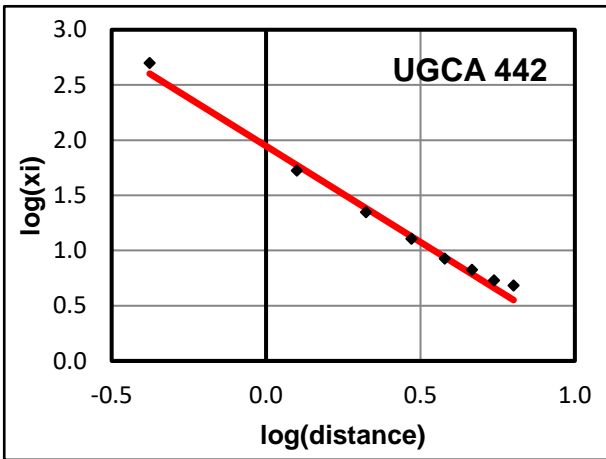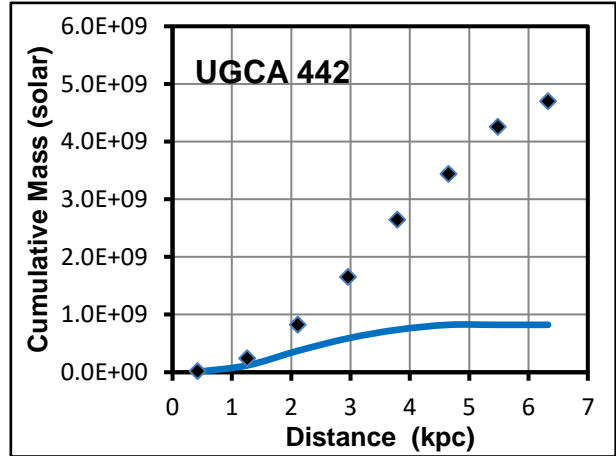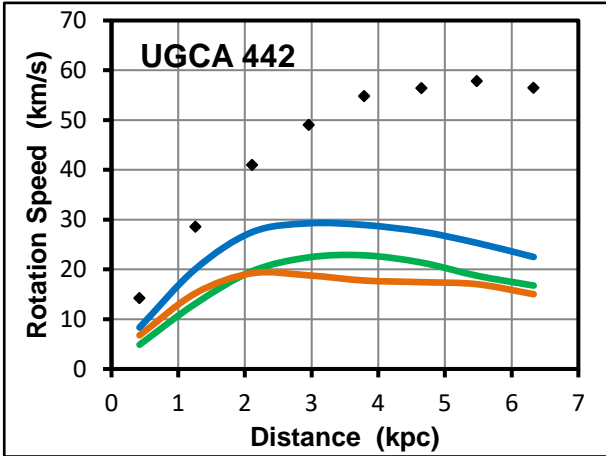| Y, M-to-L	1.85
ξ, slope	-0.96
DM factor	3.7
Fit quality	good

UGCA 442

Top left: rotation curve from SPARC data
Top right: cumulative mass
Bottom left: ξ-function
Bottom right: fitted rotation curve

Fit parameters

Y, M-to-L	2.00
ξ, slope	-1.74
DM factor	4.7
Fit quality	OK

Comments:
Fit omits outermost 2 data points.

3   References

JoKe22. (2019). "On the variation of the energy scale 22: An analysis of SPARC galaxies"
        www.varensca.com

Lelli, L; McGaugh SS; Schombert JM. (2016). "SPARC: Mass Models for 175 Disk Galaxies
        with Spitzer Photometry and Accurate Rotation Curves".
        arXiv.1606.09251