

THE ROTATION OF SPIRAL GALAXIES: INFALL MODEL vs. OBSERVATIONS

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The infall model(1) of the rotation of spiral galaxies predicts that the morphology of their velocity profiles and the relative abundance of dark matter (DM) in the intermediate region between, roughly, 3 and 5 scale lengths of their exponential disks is the result of the adiabatic contraction of the cores of their DM halos due to the dissipative infall of the gas destined to form the visible core of the galaxies. We compare(2) the model with a few observations in a plane defined by two independent variables that can be calculated for the model and the observations. The model predicts substantially more DM interior to the optical radii of the galaxies than is allowed by the "maximum disk" hypothesis (i.e. the inner circular velocity is almost entirely due to the disk matter. However, a different version of the "maximum disk" idea might agree with the model: see the discussion by E. Athanassoula in these Proceedings). An analysis of the observations that is independent of this hypothesis indicates DM in abundance that agrees with the model. The data sample, unfortunately, is too small to draw yet any definitive conclusion on the validity of the model

REFERENCES

- (1) G. Blumenthal, S. Faber, R. Flores and J. Primack, *Ap. J.* 301, 27(1986).
- (2) R. Flores, CERN preprint CERN-TH.4756/87 (1987).