# MULTIMASS MODELS FOR CLUSTERS OF GALAXIES

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It is now a widely spread opinion that a ratio of 10:1 between dark and luminous matter exists. Supported by the existence of flat rotation curves at large radii for spirals, this fact reinforces cosmological scenarios with, for instance, massive neutrinos. This content of dark matter is often estimated from the dynamical analysis of clusters of galaxies based essentially on the application of the Virial theorem or the monomassive Emden sphere or deduced from numerical simulations. However, a careful examination shows crucial failures in such approaches[1], at least the lack of a mass spectrum and/or of a dynamically influent Intra Cluster Medium. This has been included in simple models[1] together with other realistic features such as temperature gradient, isovelocity and/or isothermicity of the gravitational plasma. Our aim is thus to account simultaneously for all the available data concerning both galaxies and ICM; namely, the Nonisothermal Multimass Models[1] allow us to fit jointly the numerical density profiles of galaxies, the luminosity function, the velocity dispersion profiles versus magnitude or radius, the luminosity segregation[2], the X-ray temperature, luminosity and surface brightness profiles.

Applied to the Coma cluster, these models give two main results. First, it appears that the content of dark matter is only $3 \pm 1$ times the luminous one. Second, a central enhancement already underlined by Quintana[3] is exhibited in the numerical density profile of galaxies. Is this peak due to the presence of massive neutrinos or a massive bound system at the center of the cluster is discussed in another paper by D. Gerbal.

## REFERENCES

[1]des Forêts, G., Dominguez-Tenreiro, R., Gerbal, D., Mathez, G., Mazure, A., Salvador-Solé, E. 1982, submitted to Ap. J.
[2]Capelato, H.V., Gerbal, D., Mathez, G., Mazure, A., Salvador-Solé, E., Sol, H. 1980, Ap. J., 241, 521.
[3]Quintana, H. 1979, A. J., 84, 15.



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