

THE MAGELLANIC STREAM REVISITED

- *The Mass of the Galaxy in the Range of 100 kpc* -

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There is still a controversy on the mass of the Galaxy in the deep halo, some advocate a conservative view that the rotation velocity ultimately decays in accordance with the Keplerian law at the distance of 50 kpc, while others have come to consider that the rotation curve of the Milky Way, essentially stays flat or is still increasing at the distance of the Magellanic Clouds and the Magellanic Stream.

On the basis of accurate observed data of the spatial location of the LMC, SMC and the Magellanic Stream and the distribution of their radial velocities, it is clarified that the halo of the Galaxy has dark matter, resulting in a flat rotation curve with the terminal velocity of the order of 250 km/s. It is to be noticed that the tidal interaction of the LMC and the SMC around the Galaxy has produced a number of characteristics – a series of bursts of star formation, kinematic peculiarities within both Clouds, collision-induced imprints, etc. (Westerlund 1997). All of these characteristics have been revealed by observations, and could be interpreted as a result of at least two close encounters of the LMC with the SMC, which can occur only in the deep gravitational potential of dark matter as shown by a tidal simulation of Murai & Fujimoto (1980, 1986).

References

- Murai, T., & Fujimoto, M. 1980, *PASJ*, **32**, 581
Murai, T., & Fujimoto, M. 1986, *Ap. Space Sci.*, **119**, 169
Westerlund, B.E. 1997, *The Magellanic Clouds*, Cambridge University Press, Cambridge.