nucleated dwarfs can be made from coagulation of globular clusters near central region.

Leo I, the Mass of Our Galaxy, and Dark Halo

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Leo I is a dwarf spheroidal galaxy discovered in 1950 during the course of the first Palomar sky survey (harrington and Wilson 1950, PASP, 62, 118). It has been considered to be the most distant satellite galaxy bound to the our galaxy (Zaritsky et al. 1989, ApJ, 345, 759). Therefore accurate distance and velocity determinations are important for estimates of the mass of the our Galaxy using the timing arguments (Kahn and Woltjer 1959, ApJ, 130, 705).

Very recently the accurate distance to Leo I based on the tip of the red giant branch was given by Lee et al. (1993, AJ, in press), to be 270+10 kpc. With this distance estimate and the velocity data for Leo I (vGC = 177 km s-1) given by Zaritsky et al., we estimate the mass of the our Galaxy using the timing argument for the pair of the our Galaxy and Leo I: MG = 1.7 X 1012 M for an assumed age of the Universe of t = 14 Gyrs. The mass of the Local Group based on the pair of the our Galaxy and M31 is obtained in the same way: MLG = 4.4 X 1012 M (for distance(M31) = 770 kpc and v(M31) = -115 km s-1). This result is inconsistent with the conservative minimal halo model of the our Galaxy, but indicates an extended dark halo (Fich and Tremaine 1991, ARAA, 29, 409).

Interestingly a significant fraction-perhaps most-of the stellar population in Leo I appears to be only a few Gyrs old. It is puzzling how Leo I could form such stars out there. However, this kind of stellar population may not be rare, but very common in the Universe (for example, see the large number of faint blue galaxies in the field (Koo and Kron 1992, ARAA, 30, 613)).