NGC 185 AND THE EXTENDED FABER-JACKSON RELATION

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It has recently been found that diffuse dwarf elliptical galaxies (dE), as well as low–luminosity normal ellipticals of relatively low surface–brightness, are supported by an anisotropic velocity distribution. New kinematic observations have been obtained of the dwarf elliptical galaxy NGC 185. The velocity dispersion is constant at 28 ± 8 km s^{-1} between $3''$ and $40''$, but may increase to about twice that value in the center. We find an upper limit of 10 km s^{-1} for the rotation along either axis, so that the velocity distribution is anisotropic. The derived M/L_B is ~ 3 in solar units.

Analysis of the kinematic and photometric data now available on dE's shows that giant ellipticals and dwarfs fall on a continuous sequence in the (L, σ)–plane. Figure 1 shows that most data points for dE's define a linear sequence extending the F–J relation for normal ellipticals (an exception is represented by the two faintest dwarfs, Draco and Ursa Minor). The slope corresponds to a relation $L \propto \sigma^{2.5}$, which is in close agreement with that predicted by supernova–driven galactic wind models without dark matter. More detailed results of this work will be published in The Astronomical Journal.
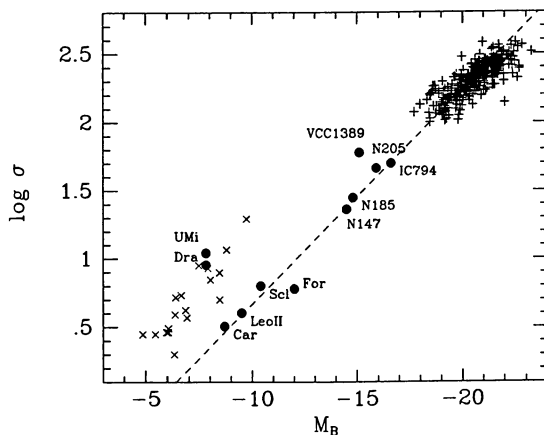

Figure 1: Velocity dispersion σ against absolute magnitude M_B, for dwarf elliptical and spheroidal galaxies (*filled dots*), normal ellipticals (*plus signs*), and globular clusters (*crosses*). The *dashed line* represents a fit to Car, Leo II, Scl, For, NGC 185, NGC 205, NGC 147, and IC 794, and corresponds to the approximate relation $L \propto \sigma^{2.5}$.

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