

Rotation curves and dark matter in early type disk galaxies.

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We are studying the rotation curves and mass distribution in a sample of 20 early type spiral galaxies, with morphological type between S0 and Sab and B-band absolute magnitude between 16 and 22; they form the massive and high-surface brightness extreme of the disk galaxy population. Our study is designed to investigate the relation between dark and luminous matter in these systems, of which little yet is known. From a combination of WSRT HI observations and long-slit optical spectra, we have obtained high-quality rotation curves which probe the dynamical mass distribution from small to large scales. Many of our galaxies have declining rotation curves, with the outermost measured velocity 10-25% lower than the maximum. We will present an analysis of the shapes of the rotation curves and correlations with optical parameters of the galaxies. Mass models will be presented for a number of interesting cases. The stellar bulges always dominate the rotation curves in the inner regions and are at least partly responsible for the decline at larger radii. We are able to put both upper and lower limits on their stellar mass-to-light ratios. Dark matter is needed to explain the shape of rotation curves in the outer parts, but these systems are less DM dominated than their late-type counterparts.

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