GASEOUS DISKS IN ELLIPTICAL GALAXIES

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A powerful way to measure the mass distribution in elliptical galaxies is to study systems with a central disk of ionized gas. Such disks occur in a small fraction (perhaps 10–20%) of nearby ellipticals, and the gas is generally believed to have been accreted from outside the galaxy as the result of a merger or interaction. Once the gas disk has settled into a principal plane of the stellar figure, measurements of its orientation and kinematics set strong constraints on the shape and orientation of the galaxy and allow us to derive M/L as a function of radius. Indeed, the observations discussed here were made at the ESO/MPI 2.2-m telescope as part of our *ESO KEY-PROGRAMME*, in which we aim to determine the mass–to–light ratios of nearby elliptical galaxies and examine the evidence for dark matter.

We have observed fifteen nearby elliptical galaxies which were already known to show emission lines in their spectra. *Line* and *continuum* images were aligned and the two aligned images were then subtracted to give a *pure emission* Hα +[N II] image. The line–emitting gas is usually confined to the inner regions of the galaxies, and typically extends to 10–30 arcsec from the nucleus.

The subtracted images show elongated emitting regions which are generally misaligned with the stellar figure of the galaxy and sometimes lie along the stellar minor axis, as in NGC 5077 (Bertola, Bettoni, Danziger, Sadler, Sparke, & de Zeeuw, 1990, Ap. J., in press). More often, however, the gas lies at some intermediate position, typically displaced by between 15° and 65° from the major axis of the stars. In most of the galaxies so far observed, the emission–line isophotes are significantly flatter than the isophotes of the underlying stellar galaxy. This is consistent with the gas lying in an *inclined disk*. If the gas is indeed in a circular disk in equilibrium, then the inclination is typically between 50° and 75° (where an edge–on disk has inclination 90°).

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