

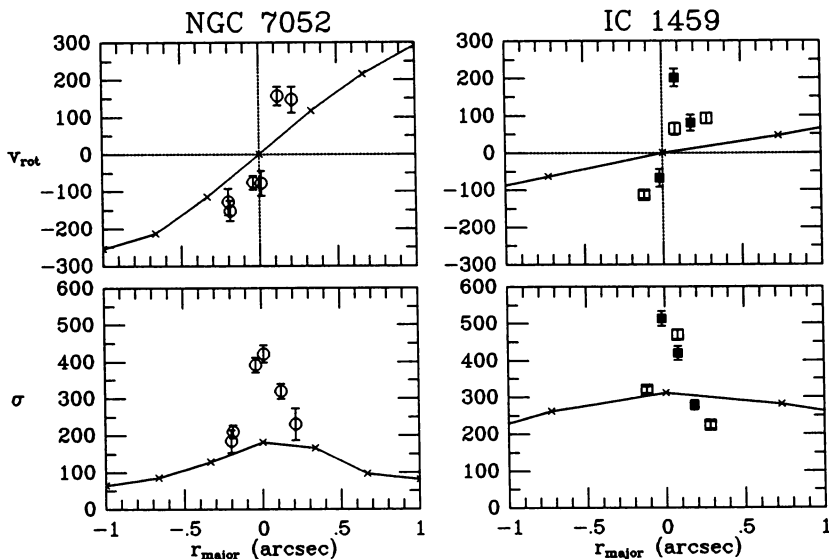
# NUCLEAR GAS KINEMATICS OF NGC 7052 AND IC 1459 FROM HST/FOS SPECTRA

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**Abstract.** We have obtained HST/FOS measurements of the nuclear kinematics of the gas disks in NGC 7052 and IC 1459. The spectra show steeper rotation curves and broader emission lines than ground-based data. Detailed modeling is in progress to constrain the mass of possible black holes.

Kinematical studies with HST of optical emission lines in galaxies with nuclear disks of gas and dust are a powerful tool to search for massive black holes. Detections have been reported for, e.g., M87 (Harms et al. 1994; Marconi et al. 1997), NGC 4261 (Ferrarese et al. 1996), M84 (Bower et al. 1997) and NGC 6251 (Ferrarese et al. 1998). Here I present preliminary results from HST/FOS observations of NGC 7052 and IC 1459 that I obtained in collaboration with van den Bosch, de Zeeuw, Carollo and Franx. NGC 7052 is an E4 galaxy with a rapidly rotating nuclear disk of dust and gas (van den Bosch & van der Marel 1995). IC 1459 is an E3 galaxy with a large scale gas disk that counter-rotates with respect to the stars in the central region (Franx & Illingworth 1988). The disks have inclinations of  $\sim 70$  and  $\sim 60$  degrees, respectively. We obtained spectra with the FOS/RD detector in the optical region of the spectrum (4500–6800Å) through small apertures placed at various positions along the major axis. Figure 1 shows the gas kinematics inferred from fits to the  $H\alpha$ + $[NII]$  emission lines, as well as lower spatial resolution ground-based measurements. For both galaxies, the HST data show a steeper rotation curve and broader emission lines than the ground-based data. This may indicate the presence of massive black holes. Detailed modeling is in progress, taking into account also the broad-band and narrow-band WFPC2 images that were obtained in the context of these projects. The resulting BH mass determinations and/or limits will be pre-



*Figure 1.* Gas kinematics for NGC 7052 and IC 1459, as function of major axis distance. Top panels: rotation velocities; bottom panels: Gaussian velocity dispersions (both in km/s). The data points with error bars are the new HST/FOS measurements. The NGC 7052 data were obtained with the circular 0.26'' diameter aperture (open circles), and the IC 1459 data were obtained with the 0.08'' (solid squares) and 0.21'' (open squares) square apertures. Crosses connected by lines are ground-based measurements. The ground-based NGC 7052 data were obtained with the William Herschel Telescope in 0.6'' FWHM seeing (van den Bosch & van der Marel 1995). The ground-based IC 1459 data were obtained with the CTIO 4m Telescope in 1.5'' FWHM seeing (van der Marel & Franx 1993). All quantities were obtained from fits to the  $H\alpha$ + $[NII]$  lines, except for the ground-based IC 1459 measurements, which were obtained from fits to the  $[OIII]5007$  line.

sented in two forthcoming papers (van der Marel & van den Bosch 1998; van der Marel, de Zeeuw, Carollo & Franx 1998).

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