

Abstract Submitted
for the OSS09 Meeting of
The American Physical Society

Gas and Stellar Kinematics in the Giant Spiral Galaxy NGC 1961

BRIAN SACASH, JASON PINKNEY, Ohio Northern University — Long-slit spectroscopy and CCD imaging from the Hubble Space Telescope and the MDM Observatory is presented for the massive spiral galaxy NGC 1961. We aimed to measure the mass of the central supermassive black hole (SMBH). We have developed our own software for spectral extraction and for the fitting of absorption and emission lines. The program subtracts the absorption-line (stellar) component from the emission-line spectra to improve the fidelity of our emission line measurements. We present our line centroids (velocities), widths (velocity dispersions), and strengths for the most prominent emission lines ($H\alpha$, [NII], and [SII]). The rotation curve from the ground-based data is in good agreement with previous work by Rubin (1979); its asymmetric appearance suggests a tidal interaction or merger. We use the rotation curve and surface photometry to estimate the enclosed mass profile of the galaxy. The emission lines near the nucleus broaden indicating more intrinsic dispersion than expected for a cold, gas disk. We estimate the BH mass using simple gas disk models. However, the high dispersion and the asymmetry in its inner rotation curve suggest that this approach is unreliable.

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Date submitted: 02 Apr 2009

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