

HST IMAGES OF THE SEYFERT GALAXY NGC 5929 AND ITS COMPANION NGC 5930¹

G. A. BOWER, A. S. WILSON² and J. S. MULCHAEY²
Space Telescope Science Institute, 3700 San Martin Drive, Baltimore, MD 21218 USA

G. K. MILEY
Leiden Observatory, Sterrewacht, Postbus 9513, 2300 RA Leiden, The Netherlands

and

T. M. HECKMAN³ and J. H. KROLIK
Department of Physics & Astronomy, Johns Hopkins University, Baltimore, MD 21218 USA

Images of the Seyfert 2 galaxy NGC 5929 and its interacting companion NGC 5930 have been obtained with HST's Planetary Camera. This interacting pair is also known as Arp 90. Each galaxy was imaged in the wavelength regions of [O III] $\lambda\lambda$ 4959, 5007, H α + [N II] $\lambda\lambda$ 6548, 6583, and the green and red continua. The nuclei of both galaxies contain emission line gas, enhanced in the images by using the appropriate continuum image to remove the contribution of the continuum light in the on-band images.

Previous ground-based observations of the Seyfert galaxy NGC 5929 include [O III] and H α + [N II] images, showing that its nucleus contains an elongated region of high-excitation emission line gas. In these HST images, this gas is clearly separated into two distinct regions separated by about 1."1 (138 h^{-1} pc, $h = H_0/100$ km s⁻¹ Mpc⁻¹). The nucleus, as defined by the peak in the continuum, lies halfway between these two distinct emission line regions. The HST continuum images reveal a dust lane lying 0."3 SE of the nucleus with a length of $\sim 1''$ and $N_H \approx 4 \times 10^{21}$ cm⁻². We find no direct evidence of the reddening and/or obscuration effects with the characteristics of a dusty torus, which, in the context of a "unified model", is expected to obscure the AGN in type 2 Seyfert galaxies. The correspondence between the emission line gas and the radio morphology suggests that the structure of the NLR in NGC 5929 is governed by matter ejected from the AGN.

The nuclear emission line gas in NGC 5930 is concentrated into a ring around the nucleus with a diameter of $\sim 250 h^{-1}$ pc and $L(\text{H}\alpha + [\text{N II}]) \approx 1.6 \times 10^{40} h^{-2}$ erg s⁻¹. These observations of Arp 90 present an opportunity to examine the details of the possible role of galaxy interactions in the triggering of an AGN.

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²also Astronomy Department, University of Maryland, College Park, MD 20742 USA

³also STScI