*RevMexAA (Serie de Conferencias)*, **15**, 84–84 (2003)



# THE STRUCTURE AND DYNAMICS OF NGC 246

A. Szentgyorgyi,[1] J. Franco,[2] L. López-Martín,[3] J. C. Raymond,[1] and E. Villaver[4]

**We have imaged the planetary nebula (PN) NGC 246 in the wavelengths [Ne V] 342.6 nm, O III at 344.4 nm, and a nearby line-free region at 338.6 nm, as well as H$\alpha$, [O III] 500.7 nm, and [S II] 673.0, 671.5 nm.**

Imaging in the 344.4 nm line is necessary to deconvolve contamination of the [Ne V] images by O III 342.9 nm (Figure 1). The radial profiles of the [Ne V] brightness decrease with radius from the exciting star (Figure 2), indicating that the bulk of the emission from this ion is due to the hard UV stellar radiation field, with a small contribution from collisional ionization in a shock between the PN shell and the interstellar medium (ISM). In contrast, the radial profiles of the emission in H$\alpha$, [O III] 500.7 nm, and [S II] are flatter and peak at the location of the shell. We have also carried out 2-D numerical simulations for this PN-ISM interaction. The simulations consider the stellar motion with respect to the ambient ISM, and include the time evolution of the wind parameters and UV radiation field from the progenitor star.

[1] Smithsonian Astrophysical Observatory, Cambridge, MA 02138, USA.

[2] Instituto de Astronomía, Universidad Nacional Autónoma de México, Apartado Postal 70-264, 04510 México, D. F., Mexico.

[3] Observatoire de Paris, DEMIRM, 75014 Paris, France.

[4] Space Telescope Science Institute, Baltimore, MD 21218, USA.

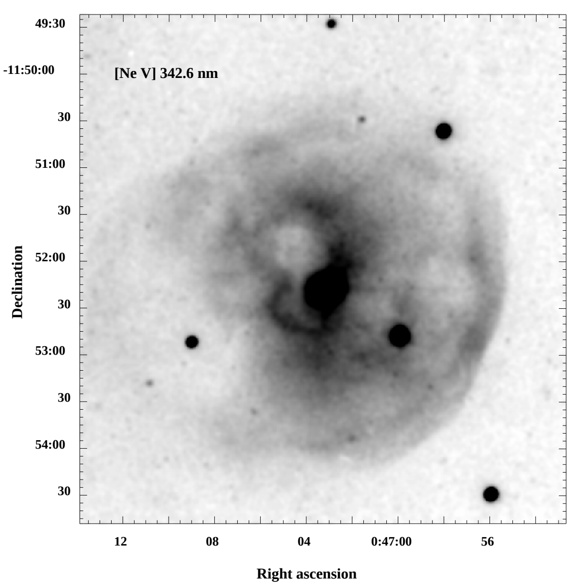


Fig. 1. [Ne V] 342.6 nm image of NGC 246 showing bright interior arcs and faint shell-like emission. The image has been continuum subtracted and contaminating O III 342.9 nm emission has been removed.

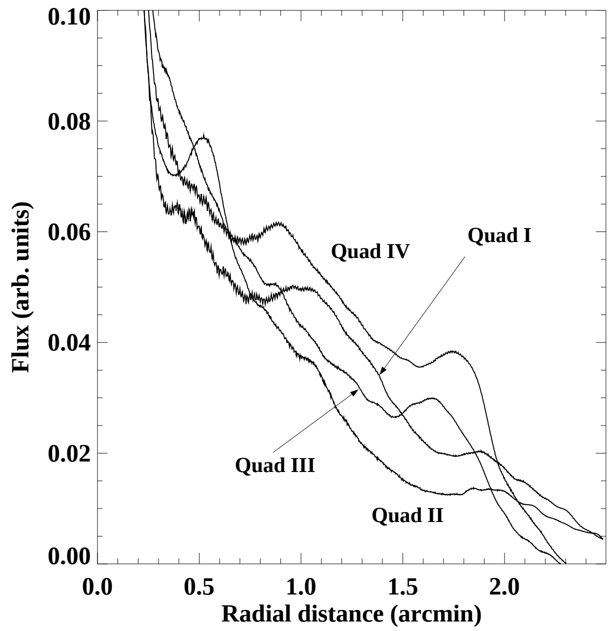


Fig. 2. Radial dependence of [Ne V] surface brightness in azimuthally averaged quadrants showing essentially monotonically decreasing brightness.