

JOINT COMMISSION MEETING ON  
UV AND X-RAY OBSERVATIONS OF INTERACTING BINARY SYSTEMS

(Commissions 42 and 44)

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## ULTRAVIOLET OBSERVATIONS OF THE R AQUARIJ JET

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Observations of the recently discovered jet feature in the symbiotic variable R Aquarii (M7e+pec) were obtained with the International Ultraviolet Explorer (IUE). A comparison of low dispersion UV-spectra reveals important differences between the central ionized source and the jet feature. The UV-continuum flux  $F_{\lambda}$  between 1200-2000Å that rises with decreasing wavelength in the jet feature, essentially is independent with wavelength in the central compact nebula. The prominent emission lines of Si III]  $\lambda$ 1892Å and Si II  $\lambda$ 1817Å, evident in the central star, are virtually absent in the jet. The carbon lines of C IV, C III] and C II also suggest the general excitation of the jet is comparatively lower than the central star. This is further indicated by enhanced S II  $\lambda$ 1250, 1295Å and C II  $\lambda$ 1335Å emission in the feature. We speculate that material that is ejected from the symbiotic system cools through free-free and nebular recombination emission.

The jet or "spike" so-called by Wallerstein and Greenstein (1980), first appeared sometime between 1970 and 1977. Herbig (1980) reported moderate ion excitation in the jet from optical spectra that consists of [S II], [O II], [O III] and He I. Subsequent observations obtained with the VLA at 6 and 1.3 cm (Sopka et al. 1982) indicate the feature is also present in the radio. The relationship between the jet and outer extended 2-arcmin nebulosity is not clear at present. However, Lick 3-meter direct plates obtained by Herbig (1980) indicate material is ejected along an axis perpendicular to the 2-arcmin nebulosity that encircles the central object. We find that the UV-continuum from the jet feature could be the result of dust-scattered stellar continuum from the central ionizing star similar to that suggested for Herbig-Haro objects. Si may be depleted in the jet, although the prevailing lower temperatures could promote the formation of silicate grains. A model explaining the appearance of the feature has been suggested by Kafatos and Michalitsianos (1982) that involves episodic mass transfer in a highly elliptical binary system.

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