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PRELIMINARY REPORT ON THE *IUE* SPECTRA OF μ^1 SCORPII

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RESUMEN

Se trata de un informe preliminar sobre una investigación de espectros ultravioleta, tomados con el *IUE* de la variable eclipsante μ^1 Scorpii, en el que se describen los tipos de líneas que se observan en conjunción. Las líneas de resonancia de Si IV muestran una estructura fina.

ABSTRACT

This is a preliminary report on an investigation of *IUE* ultraviolet spectra of the eclipsing variable μ^1 Scorpii, where we report on the type of lines that are observed at conjunction. The resonance lines of Si IV display a fine structure.

Key words: ULTRAVIOLET-SPECTRA – STARS-ECLIPSING BINARIES

In view of the fact that we are carrying out a new spectrographic study of the eclipsing binary μ^1 Scorpii in the photographic region, we thought it advisable to analyze the spectrum of this object in the ultraviolet region. In July 1979 images of μ^1 Sco were secured with the *IUE* satellite from the NASA ground observatory at the Goddard Space Flight Center, Greenbelt, Maryland, in the high dispersion mode. The material that became available corresponds to primary eclipse and to one of the quadratures. It only displays absorption lines.

The images taken at conjunction display a number of types of profiles that conceivably could allow us to describe the structure of the gaseous envelope around the system, particularly if one could have available observations at different phases in the orbital cycle.

Let us recall that μ^1 Sco is one of the double-lined close binaries for which variations of line intensities have been reported on different occasions. These variations have been interpreted as produced by the presence of a gaseous stream in the system. Therefore, if the mass-loss is non-conservative, we should expect a large, relatively thin envelope surrounding the close pair.

In attempting to describe the different types of lines that are present at the conjunction observed by us, we can say that there are many lines that arise from resonance transitions. These lines can be placed in three different groups, namely:

a) Sharp and deep lines identified with elements like O I, N I, C II, Si II, Al II, Fe II, Mg II, etc. They are probably circumstellar and interstellar.

b) Lines that have about 1.5 A FWHM identified with elements like Si III and Al III.

c) Lines about 2 A FWHM identified as Si IV.

d) Low excitation, relatively deep lines of about 1 A FWHM of C II, Si II, Si III, Ti III.

e) Higher excitation, relatively broad ($\sim$ 2 A FWHM) and shallow lines of C III.

An interesting feature of the spectrum is the fact that the resonance lines of Si IV are characterized by a fine structure where we count as many as 9 components that, interpreted in terms of velocity, suggest values which go from -180 to about $+150$ km s^{-1}, relative to the undisplaced center of the broad line.

There is no point in trying to propose a model of the envelope by locating, even roughly, the regions where each group of lines might originate, before we analyze the image secured at quadrature.

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