ULTRAVIOLET AND OPTICAL OBSERVATIONS OF HDE 245770/
A 0535+26 SYSTEM DURING AN X-RAY FLARE,

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ABSTRACT. We present high and low dispersion UV spectra of
HDE 245770, which is the optical counterpart of the recurrent
transient X-ray pulsar A 0535+26, during a decay of an X-ray
flare. UBV photometric measurements and medium dispersion
optical spectra were simultaneously obtained.

The energy distribution of the star in the 0.12 - 10 micron
range is compared with the models of Kurucz and Poeckert and
Marlborough.

In this phase, HDE 245770 does not show evaluable varia­
tions with respect to the quiescent X-ray phase.

1. INTRODUCTION

The optical counterpart of the transient X-ray source A 0535+
26 is the 9th magnitude early type star HDE 245770 (Bartolini
et al. 1978; Rossiger 1978 a, b), classified as O9.7 IIIe by
Giangrande et al. (1980). The X-ray source was found to be mo­
dulated at 104 s (Rosenberg et al. 1975). The main characteri­
stics of the optical object are reported in the papers by
Giangrande et al. (1980) and Guarnieri et al. (1981) and in the
references therein. The long term photometric history of HDE
245770 does not show particular features related to eigth ob­
served X-ray flares of A 0535+26. Nevertheless the mean lumi­
nosity in the last few years is larger of few tenth of magni­
tude with respect to the past decades (Guarnieri et al. 1981).
Short term optical variations, strongly related to a rise of
an X-ray flare (Chartres and Li 1977; Rakhaminov et al. 1980),
were reported by Bartolini et al. (1978) and Rossiger (1978 a,
1978 b). No optical variations were observed during the decay
of two different X-ray flares (Sims and Fraser 1979; Bartolini

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et al.1979; Oda et al.1980a,b; Bartolini et al.1980). During the decay of the October 1980 X-ray flare of A 0535+26, we performed UV observations with IUE satellite of HDE 245770. In this paper we present these UV measurements. They do not show substantial variations with respect to those we obtained during a quiescent X-ray phase (Giovannelli et al.1980). We present also IR measurements in the 2.3 - 10 micron range, which allow to complete the energy distribution of HDE 245770. The observed asymmetry of the UV resonance lines and the IR excess of HDE 245770 confirm the presence of an expanding envelope surrounding the star, already detected by Giovannelli et al. (1980) and Persi et al. (1979).

2. OBSERVATIONS

Table I summarizes the observations we performed during the autumn 1980 flare.

Table I. Journal of the observations

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<td>L</td>
<td>400 m</td>
<td>1200-1950 Underexp.</td>
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<td>S</td>
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<td>20,21,22</td>
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<td>(60 cm Loiano tel.)</td>
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<td>28,29</td>
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<td>2.3-10μ</td>
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