Astrophysics > High Energy Astrophysical Phenomena

Strong [O III] and [N II] emission lines in globular clusters from photoionized R Corona Borealis star winds

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The globular cluster X-ray source CXO J033831.8-352604 in NGC 1399 has recently been found to show strong emission lines of [O III] and [N II] in its optical spectrum in addition to ultraluminous X-ray emission with a soft X-ray spectrum. It was further suggested that this system contained an intermediate mass black hole which had tidally disrupted a white dwarf, producing the strong emission lines without detectable hydrogen emission. We show that an alternative exists which can explain the data more naturally in which the oxygen and nitrogen rich material is ejecta from a RCB star, or a tidal disruption of an RCB star or a hydrogen-deficient carbon star. The scenario we propose here does not require an intermediate mass black hole as the accretor, but also does not exclude the possibility.

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