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OUTBURST OF R71 IN THE LARGE MAGELLANIC CLOUD

R. Gamen, Instituto de Astrofisica de La Plata, CONICET; R. Barba, Universidad de La Serena and Insituto de Ciencias Astronomicas y de la Tierra, CONICET, San Juan; N. Walborn, Space Telescope Science Institute (STScI); A. Bonanos, Institute of Astronomy and Astrophysics, National Observatory of Athens; N. Morrell, Las Campanas Observatory (LCO), Carnegie Observatories; D. Lennon, European Space Agency and STScI; G. Ferrero, Facultad de Ciencias Astronomicas y Geofisicas, Universidad Nacional de La Plata; G. Preston, Carnegie Observatories; and E. Schkolnik, Department of Terrestrial Magnetism, Carnegie Institution, write that in early Aug. 2009, A. Jones (Nelson, New Zealand) reported an unusual visual brightening of the luminous blue variable HDE 269006 (= R71) in the Large Magellanic cloud to visual mag 9. Inspection of the ASAS-3 photometric database (ASAS 050207-7120.2) shows that the unusually gradual rise in the light curve of R71 started ≈ 5 years ago, albeit with some oscillations during that time, becoming steeper over the last 1300 days; the latest outburst was first reported via vsnet by P. Williams in Mar. 2008 and T. Kato in Apr. 2008 based on visual observations and the ASAS-3 photometric database, and by Munari *et al.* (2009, *A.Ap.* **503**, 511), who noted that R71 had brightened to $V = 9.97$ and that RAVE spectroscopy in Feb. 2008 showed it to be similar to an early-A supergiant. After a bright maximum in 1975 ($V \approx 9.9$), the star had faded to $V \sim$ 10.8–11.0.

R71 is now visually the brightest star in the LMC. Follow-up spectroscopic observations obtained at Complejo Astronómico El Leoncito on Aug. 9 by Ferrero, and at LCO by Schkolnik on Aug. 20 and 24 and by Preston on Aug. 26, showed that the spectrum of R71 resembles that of an extreme early-F-type hypergiant. This spectrum is significantly cooler than that previously seen at the maximum state in 1970–1977, when the system reached an A1 Ieq spectral type (Thackeray 1974, *MNRAS* **168**, 221; Wolf *et al.* 1981, *A.Ap.* **103**, 94). Currently the spectrum of R71 displays a populous set of sharp and deep absorption lines of singly ionized and neutral metals characteristic of an F0 Ia spectrum. Narrow and distinctive P-Cyg profiles in Hα, Hβ, Fe II (multiplet 42), and Ca II infrared triplet emission lines are also present. This high-state spectrum is unprecedented in R71 and, together with the unprecedented visual magnitude, indicates an extreme outburst in this LBV star, with the characteristic conservation of the bolometric magnitude.

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