

Optical spectra of 5 new Be/X-ray Binaries in the Small Magellanic Cloud and the link of the supergiant B[e] star LHA 115-S 18 with an X-ray source

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The Small Magellanic Cloud (SMC) is well known to harbor a large number of High-Mass X-ray Binaries (HMXBs). The identification of their optical counterparts provides information on the nature of the donor stars and can help to constrain the parameters of these systems and their evolution. We obtained optical spectra for a number of HMXBs identified in previous *Chandra* and *XMM-Newton* surveys of the SMC using the AAOmega/2dF fiber-fed spectrograph at the Anglo-Australian Telescope. We find 5 new Be/X-ray binaries (BeXRBs; including a tentative one), by identifying the spectral type of their optical counterparts, and we confirm the spectral classification of an additional 15 known BeXRBs. We compared the spectral types, orbital periods, and eccentricities of the BeXRB populations in the SMC and the Milky Way and we find marginal evidence for difference between the spectral type distributions, but no statistically significant differences for the orbital periods and the eccentricities. Moreover, our search revealed that the well known supergiant B[e] star LHA 115-S 18 (or AzV 154) is associated with the weak X-ray source CXOU J005409.57-724143.5. We provide evidence that the supergiant star LHA 115-S 18 is the optical counterpart of the X-ray source, and we discuss different possibilities of the origin of its low X-ray luminosity ($L_x \sim 4 \times 10^{33}$ erg/s).

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