

Poster at Splinter Meeting

Splinter D

A NEW SURVEY FOR WOLF-RAYET NEBULAE IN THE MAGELLANIC  
CLOUDS USING MCSF

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Using the data of our new imaging survey of the Magellanic Clouds, the Magellanic Clouds Stars and their Feedback survey (Bomans et al. 2014), we search for new circumstellar nebulae around Wolf-Rayet stars. Nebulae around Wolf-Rayet stars present unique site to study the mass loss history, evolutionary state, and Lyman continuum flux of this class of massive evolved stars.

We analyzed the environment of all Wolf-Rayet (WR) stars listed in the Skiff et al. (2013) catalog for the LMC and the Massey & Holmes (2002) catalog (supplemented by Massey et al. 2003). With our H $\alpha$  and [OIII] images from MCSF (both the full flux and the the continuum subtracted versions) a visual inspection was performed, identifying rings, part of rings, or shells roughly centered on the target stars. Assuming photo-ionization by the hot continuum of the WR star, the nebulae should show bright [OIII] emission, even if the composition of the nebula is dominated by CNO processed material (Chu, Weis & Garnett 1999). Working on the 137 Wolf-Rayet stars in the LMC, we detected all 21 WR nebulae previously reported by Dopita et al. (1994) and Stock & Barlow (2010), plus 1 new candidate. In the SMC, all 12 Wolf-Rayet stars appear to show no circumstellar emission, with the exceptions of the WR/LBV HD 5980 and AzV 336a, both located in large HII regions. The complex situation of HD 5980 will be discussed in more detail. Additionally, we used astro-informatics methods to search for new WR candidates in both Magellanic Clouds (Becker et al. 2015), and analyzed the circumstellar environment around our 45 candidates. In the LMC, 2 stars show possible, and 1 star a definite circumstellar nebula. The new objects and their characteristics will be discussed in the context of WR star evolution and formation of circumstellar nebulae.