Contributed Talk

Splinter Populations

The Wolf-Rayet population in the Magellanic Clouds and implications on star formation

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Classical Wolf-Rayet (WR) stars are hot, evolved, hydrogen-poor stars characterized by powerful, radiation-driven stellar winds. Through their energenic and chemical input, WR stars play a decisive role in shaping the evolution and star-formation history of their host galaxy. Massive stars are understood to reach the WR phase after having shed much material via either stellar winds or mass-transfer in binary systems. Current evolutionary models predict that the majority of WR stars at the low metallicity environments of the Magellanic Clouds form via binary mass-transfer.

Using the PoWR code, we performed a non-LTE spectral analysis of the complete population of WR binaries in the Small and Large Magellanic Clouds (SMC and LMC), testing mass-luminosity relations against orbital masses, and constraining evolutionary channels for each system using the BPASS and BONNSAI tools. We find that, while mass-transfer in binaries may have played a role in their detailed evolution, it does not dominate the formation of WR stars in the Magellanic clouds. In my talk, I will discuss the implications and constraints set by our study on the initial mass function and the star formation history in the Magellanic Clouds.