

Talk at Splinter Meeting

Splinter I

WN POPULATIONS IN NEARBY GALAXIES

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Nearby galaxies with active star formation are ideal laboratories to investigate the physics of massive stars. Due to their proximity, these galaxies offer the possibility to study massive stars on all scales from individual objects to complete populations. Moreover, since the distances to Local Group galaxies are well established, the results obtained from the spectral analyses are free from uncertainties inferred from unsure distances, which is a major problem in the Milky Way. Furthermore, the wide variety of metallicities within the Local Group allows to probe the effect of the metallicity on the evolution of massive stars and to test the predictions of stellar evolution models. In this talk we will give an overview to our recent results on the Wolf-Rayet stars of the nitrogen sequence (WN stars) in M31, the LMC, and the SMC, revealing significant differences between the individual WN populations. By comparison with their Galactic counterparts, we derive an empirical relation between the mass-loss rate and the metallicity, which has important implications for stellar evolution calculations. Furthermore, we discuss different evolution scenarios that might apply to the investigated WN populations.