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The role of AGB stars in stellar population models (R)

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With the recent advances in infrared instruments on large telescopes, such as X-shooter and KMOS, as well as NIRSpec on JWST, near-IR spectroscopic information of different types of unresolved galaxies in various environments will increase in quantity and in quality. Stellar spectral libraries and associated stellar population models need to keep up with the times. Near-IR spectra of intermediate-age and old stellar populations are sensitive to cool K and M giants. None of the previous empirical libraries has extensive coverage of the important stellar evolutionary stages needed for stellar population modelling in the near-IR. Furthermore, (O-and C-rich TP-)AGB and RGB stars are rarely segregated in stellar population modelling. We are presenting a new generation empirical stellar library –the X-shooter Spectral Library (XSL), and stellar population models. With 830 stellar spectra, this moderate-resolution near-UV to near-IR (R ~ 10 000, 300 –2480 nm) spectral library will cover the entire HR diagram, with an emphasis on M giants. We construct sequences of the average spectra of XSL static giants, variable O-rich giants, and C-rich giants to include in the stellar population models separately. The extended wavelength coverage and high resolution of the new XSL-based stellar populations models will help us to bridge the optical and the near-IR studies of the intermediate and old stellar populations, and clarify the role of evolved cool stars in stellar population synthesis.

Session

Stellar evolution

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