

High resolution spectroscopy, stellar nucleosynthesis, Galactic populations, spectroscopic surveys, exoplanet studies and stellar atmosphere modelling.

Tuesday, October 19, 2021 10:20 AM (15 minutes)

High resolution spectroscopy has fundamentally shaped my scientific career and has consequently become my stock in trade. I will present several benchmark examples of my work with high resolution spectroscopy of stellar spectra (a definitely biased point of view but which became relatively extensive overtime), illustrating the needs and requirements for future high resolution spectrographs and in particular for HRMOS. I will notably mention metal-pool stars studies and early stellar nucleosynthesis, Galactic chemical evolution and chemical tagging of Galactic populations, the importance of determining stellar ages via chemical analysis only but also how internal mixing processes in giants can be constrained, globular clusters and the chemistry of their multiple population, chemical outliers and in particular the mystery of the phosphorus-rich stars as well as my recent implication in works with exoplanet studies. Moreover, I will show how all those examples are also tightly intertwined with data coming from large spectroscopic surveys (e.g. APOGEE and Gaia-ESO), but also how the analysis of high resolution spectra is completely determined by our ability to model stellar atmospheres and compile high accuracy atomic and molecular data.

Type

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