

MoU INAF-Cineca

Final report on Project INA17_C2A09 (GESBAYES)

Purpose of this project is the application of a new bayesian approach for the inference of Astrophysical parameters from optical spectra at resolution at $R=17000$, such as those obtained by the GIRAFFE arm of the FLAME spectrograph.

Studying the competitiveness of the MARCONI KNL system in MCMC approaches for spectroscopic inference problems turned out to be an important part of the project. The initial difficulties in generating optimal configuration files for the problem at hand have caused delays that prevented us to contribute to the sixth and final data release of the Gaia, as planned. Nevertheless, the project has been pursued as a comparison with other methods used in the Gaia-ESO surveys as well as a bed-test for the application of the method to Gaia spectrophotometry.

We found that the KNL system is advantageous with respect to other systems used once a fine tuning of the computation strategy is implemented, but most importantly, an appropriate optimisation of the configuration files.

The project had to be suspended because of lack of dedicated fundings. It is planned to restart the project in case dedicated funding will be available.

The results obtained within this project using the MARCONI KNL system are discussed in details in Marcellino2018.

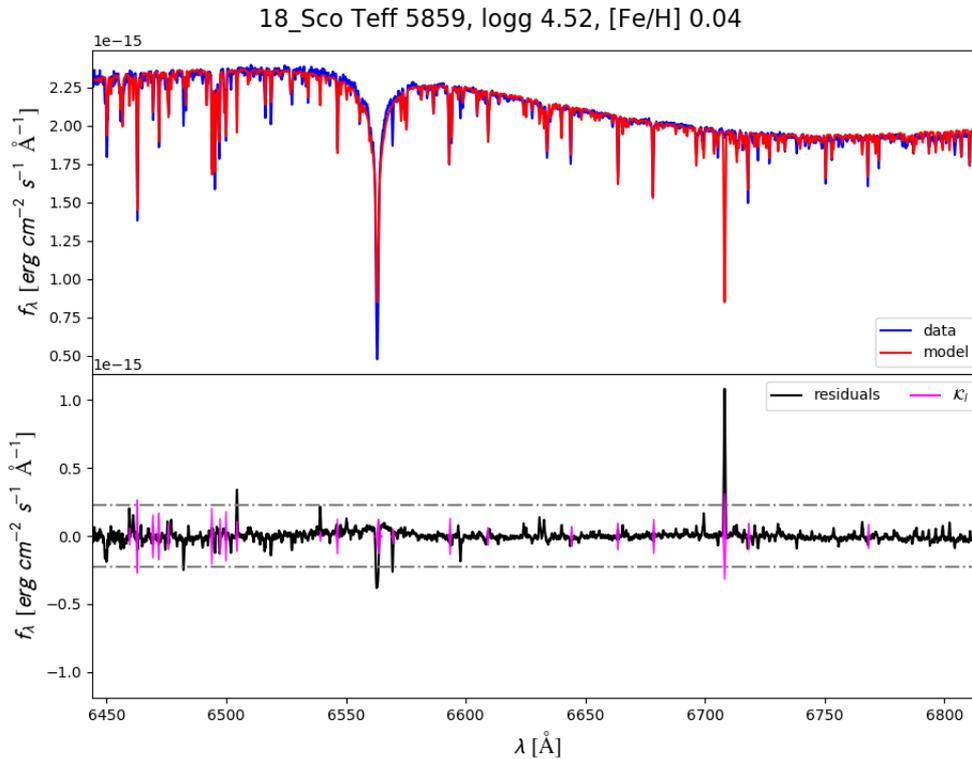


Fig.1 Sample MCMC fit of a 18 Sco spectrum affected by imperfect removal of the blaze function

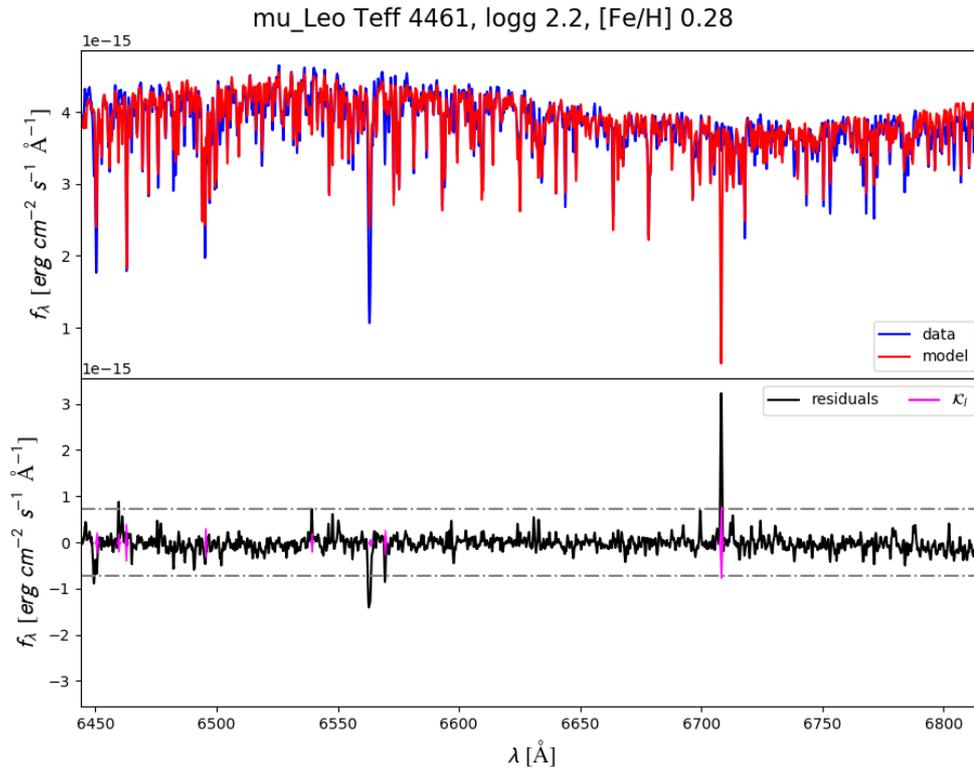


Fig 2. Sample MCMC fit of a spectrum of the cool giant Mu Leo affected by imperfect removal of the blaze function.

This project did not work out as an incubator for further larger project, IS CRA or PRACE.

Aver ottenuto risorse di supercalcolo tramite il MoU CINECA-INA F ha consentito di realizzare una continuit  nei test effettuati con risorse di calcolo INAF (CHIPP project) confrontando le performance ottenute con MARCONI KNL con altre architetture di HPC.

Having obtained computing time within the CINECA-INA F MoU allowed us to have a continuity in the tests carried out using other INAF computational facilities within the CHIPP project, comparing the MARCONI KNL performances with other HPC facilities in Astrophysical Parameters inference from spectroscopy and MCMC model fitting.

List of publications:

Marcellino Cristina, 2018, "Spectroscopic inference with imperfect models", Tesi magistrale di laurea, Universit  di Catania