Astroserver Live - Online spectral analysis with Tlusty models

Peter Nemeth[*][1]

[1]Astroserver.org – Hungary

Abstract

Tlusty is a general open-source tool to model stellar atmospheres. The fine solutions and the way of its implementation makes it a complex, powerful, and yet flexible professional tool; the best on the market. Although Tlusty is freely available, users pay a price, which is the time spent climbing the learning curve to use the code routinely and efficiently. Driven by this experience we have developed XTgrid, a spectral analysis procedure for Tlusty. Next, to extend the user base of Tlusty and help non-LTE stellar spectroscopy, we endeavoured on developing an online interface for XTgrid: Astroserver Live. A service that makes classical spectral analyses available in a web-browser. We have integrated XTgrid with Tlusty/Synspec to fit UV-optical-IR stellar spectra and designed a website to guide users through data submission and parameter configuration. Our goal is to make the work with Tlusty as simple as uploading an observation and specifying its resolution. The procedure carries out the rest of the analysis in an automated way using the Astroserver.org computing facilities.

Experienced users can apply their own keyword files, compile their own version of Tlusty and interact with the fit procedure to make the most out of the capabilities of Tlusty/Synspec and the service. Among many other features, users can combine data sets from different instruments in a single run, or model the components of double-lined spectroscopic binaries. With these features the Live tool allows one to carry out detailed analyses of individual targets or to evaluate sample properties in large surveys. We introduce both applications through examples.

The computational demand of the Live tool, just like Tlusty models, can be heavy and analyses with metal line-blanketed models can be lengthy, therefore we offer a "sandbox" version, which is limited to models with H, He, C, N, O opacities and suitable for trying and testing the web tool.

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[*]Speaker