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# Challenges in inferring fundamental spectroscopic stellar parameters

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## Abstract

Fundamental stellar parameters are key for the understanding of many different fields in Astrophysics. There are several techniques available that can be used to characterize fundamental stellar parameters. Spectroscopy is one of the best keys to unlock the fundamental properties of the stars, mostly inferred based on the study of their atmosphere layers. Here we start by a brief description of the procedure of a well established spectroscopic analysis method based on line by line analysis. This method has been used for several years to derive homogeneous spectroscopic stellar parameters, mostly focused in the study of planet-host stars but not only. We present how these parameters compare with others derived with different spectroscopic analysis methodologies and show where these methods are more and less reliable. One of the problems is to accurately constrain the stellar surface gravity and we show how we can use asteroseismology and astrometry to constrain and improve its determination and access its dependence with other spectroscopic parameters. Finally it is mentioned some methods to approach the challenge of characterizing the cooler M dwarf stars.

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