

The chemical composition of young open clusters: is it real or not?

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In the last 15 years, several spectroscopic investigations seem to indicate an anomalous chemical composition of young Galactic open clusters and star-forming regions, which include (but is not limited to) sub-solar iron (Fe) abundances of these systems in the solar neighborhood, extreme and unexpected barium (Ba) enhancements (with apparently solar values of lanthanum, La), and super-solar abundances of some atomic species (e.g., ionized chromium). Different independent studies have demonstrated that in such young stars, the higher levels of stellar activity can alter the spectral line formation and, consequently, the derived atmospheric parameters and abundances. These results have drawn attention to the necessity to revise the spectroscopic analysis technique used for very young stars.

In this talk, I will present you a new spectroscopic approach (based mainly on Ti lines) developed to overcome the effects of the increased stellar activity that affects the analysis of very young (ages less than 200 Myr) stars. Moreover, I will present to you the outcome of my study on the abundances of the *s*-process elements (Cu, Sr, Y, Zr, Ba, La, and Ce) and their time evolution. I will discuss the results and the scientific implications on stellar properties and Galactic evolution models. I will also address the importance to understand deeply these aspects in light of the data produced on an industrial scale by the concluded, ongoing, and future large spectroscopic surveys.

Type

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Primary author: BARATELLA, Martina (Università degli studi di Padova)

Presenter: BARATELLA, Martina (Università degli studi di Padova)

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