Contribution ID: **28** Type: **not specified**

New candidates for chromospherically young, kinematically old objects

Tuesday, October 19, 2021 12:10 PM (15 minutes)

One method to estimate stellar ages is based on the so-called chromospheric activity (CA), according to which we can infer that chromospherically active isolated objects must be young. At the same time, stellar orbits in the Galaxy give rise to a statistical relationship according to which anomalous velocities are probably associated with old stars. This work was built in function of objects with high CA (supposedly young) that exhibit high components of space velocities (supposedly old); we call these objects chromospherically young and kinematically old, or CYKOs. We built a sample with 4401 stars with known chromospheric activity and space velocities available through data from the Gaia mission. By applying a formalism proposed in a work that we revisit here, we selected 84 CYKOs objects in order to analyze their amount of lithium, which is sensitive to ages since it is consumed in the stellar interiors over time. Noting the absence of this element in these objects, we tested whether a scenario of smooth coalescence between the components of a short-period binary is feasible to explain their formation. The result of this process would be an isolated star that has already orbited the galactic center enough to present velocities typical of an old object, but still active due to the interaction between the components of the system. Through spectroscopic observations and archive spectra, we found 14 stars whose amount of lithium attests to this scenario, doubling the number previously presented in the literature. In addition, another formation scenario is also preliminarily addressed, and we found 2 CYKOs objects from our sample that are actually companions of white dwarfs. Both hypotheses explore the idea that these stars had their chromospheric activity fueled as they aged.

Type

contributed talk

Primary authors: MACHADO PEREIRA, Eduardo (Observatório Nacional do Rio de Janeiro); Dr ROCHA-PINTO, Helio Jaques (Valongo Observatory)

Presenter: MACHADO PEREIRA, Eduardo (Observatório Nacional do Rio de Janeiro)

Session Classification: Day 2