



Contribution ID: 20

Type: **Oral**

## The compositions of small planets with HARPS-N@TNG

*Tuesday, 22 October 2019 16:45 (25 minutes)*

Small ( $R_p < 3 R_\oplus$ ) exoplanets show an astonishing diversity in composition ranging from volatile-dominated to rocky Earth-like or iron-rich (Mercury-like) compositions. We have significantly contributed to unveil this diversity with the HARPS-N/GTO radial-velocity program aiming to measure accurate and precise masses/densities of Kepler, K2 and TESS small planets, which in turn allow to estimate the planet composition. First we will illustrate the properties of some of the most interesting Kepler/K2 exoplanets we have characterized with HARPS-N, then we will discuss the possible mechanisms that may shape the planet compositional properties and the crucial issues in the understanding of the origin of the composition diversity. The knowledge of interior compositions is also essential to select the small exoplanets most suitable for atmospheric characterization with future ground- and space-based facilities.

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**Session Classification:** Exoplanets characterization