Contribution ID: **35** Type: **Oral**

Compositional signatures of the complex interactions between giant planets and planetesimals in protoplanetary disks

Monday, 21 October 2019 15:50 (25 minutes)

The formation process of planetesimals and giant planets is entwined with the evolution of the protoplanetary disks in which they are born. From the moment of their appearance, however, the interplay between giant planets and planetesimals contributes in shaping the characteristics of the surrounding protoplanetary disks. Signatures of these processes are left in the composition of both giant planets and circumstellar disk: in this talk we will present recent efforts within the Italian national community to study which compositional signatures can be used as windows into such still limitedly understood processes. Specifically, we will describe how modelling the dynamical and collisional evolution of the planetesimals embedded in the circumstellar disk of HD163296 in response to the formation of its giant planets allows for explaining the anomalies observed with ALMA in the abundance and distribution of its dust and in the composition of its gas. In parallel, we will introduce recent efforts in investigating how the same processes shaping HD163296 cause the enrichment in high-Z material of the atmospheric and envelope composition of giant planets during their formation. Particularly, we will discuss how the accreted material is characterized by an overall non-solar composition and describe ongoing activities in the framework of the ESA mission ARIEL and the NASA mission JUNO to unravel the information provided by the different elements contributing to the envelope and atmospheric enrichment.

Primary authors: Dr TURRINI, Diego (INAF-IAPS); MARZARI, Francesco (Università degli Studi di Padova); Dr POLYCHRONI, Danae (Istituto Nazionale di Astrofisica (INAF)); TESTI, Leonardo; SCHISANO, Eugenio (Istituto Nazionale di Astrofisica (INAF)); MOLINARI, Sergio (Istituto Nazionale di Astrofisica (INAF)); FEDELE , Davide (Istituto Nazionale di Astrofisica (INAF))

Presenter: Dr TURRINI, Diego (INAF-IAPS)

Session Classification: Protoplanetary disks