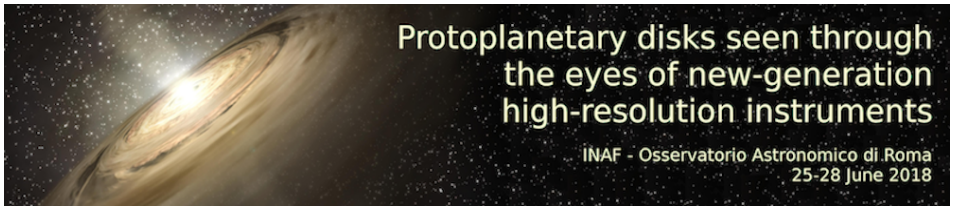

Contribution ID: **25** Type: **Talk**

The GENESIS-SKA project: looking for Solar System analogs

Tuesday, 26 June 2018 17:50 (20 minutes)

The recipe to make a habitable planet like our own Earth requires a relatively small rocky planet, at the right distance from the host star, with a not-too-thick atmosphere which should be rich in volatiles and capable of developing complex organic molecules chemistry. Searches for exoplanets have shown a large degree of diversity among planetary systems, but have left still unanswered the two fundamental questions of how common planetary systems like our own are and of how general are the processes that allow for creating habitable planets. Understanding the formation of planetary systems and the chemical processing of the volatiles that are going to form their atmospheres is therefore key to understand the origins of the Solar System. Key questions still to be addressed are: (i) how solids overcome the growth barriers to become rocky cores, (ii) how the formation of giant planets and their interaction with gas and solids in disks affect the formation of planets, and (iii) how chemically complex are the volatiles delivered on the pristine planetary atmospheres.

The SKA telescope, and more specifically the GENESIS-SKA project, will allow us to study in detail the evolution of dust as it evolves into planetesimals and rocky planets and to detect heavy complex organic molecules that today are beyond the reach of our observing capabilities. The GENESIS-SKA project, supported as PRIN-INAF, is carrying on studies on dust evolution, planet formation, and pre-biotic chemical complexity, in the context of preparation of SKA Key Programmes. More specifically, we are featuring a brand new synergy (in the INAF framework) between astronomical observational (e.g. VLA, GBT, ALMA, IRAM, LBT, VLT) and modeling efforts, laboratory experiments, and state-of-the-art quantum-chemical computations.

Primary authors: CODELLA, Claudio (INAF - Osservatorio Astrofisico di Arcetri); ALCALA', J.A. (INAF - Osservatorio Astronomico di Capodimonte); CIARAVELLA, A. (INAF - Osservatorio Astronomico di Palermo); GRATTON, R. (INAF - Osservatorio Astronomico di Padova); LODATO, G. (INAF - Osservatorio Astronomico di Milano Brera); NISINI, B. (INAF - Osservatorio Astronomico di Roma Monteporzio); PALUMBO, M.E. (INAF - Osservatorio Astrofisico di Catania); TURRINI, D. (INAF - Istituto di Astrofisica e Planetologia Spaziali); BOCCATO, C. (INAF - Osservatorio Astronomico di Padova); TESTI, L. (ESO); TEAM, and the GENESIS

Presenter: CODELLA, Claudio (INAF - Osservatorio Astrofisico di Arcetri)

Session Classification: Protoplanetary disks (chair A. Frasca)