



Innsbruck Physics Colloquium

Exoplanets in our front yards: Gas giant exoplanets and their climate regimes

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More than 5500 extrasolar planets are known, most of them are located within our solar neighbourhood where they orbit stars different than our Sun. How does the climate differ on extrasolar planets that orbit such different host stars? By building and utilized virtual laboratories temperature, wind and cloud maps of such extrasolar planets can be predicted and studied. Our virtual laboratories are therefore vital tool to interpret observations from, e.g. space missions like CHEOPS and JWST, and to make predictions for future missions like PLATO and NewAthena. For this, our present focus is on giant gas planets since they have observable atmospheres, and hence, enable us to link modeling and observation to understand their physics and chemistry. Clouds most often block the view into the atmospheres and hence, hinder the spectroscopic in-depth characterization of the many known exoplanets. Of particular interest is therefore the understanding and the modeling of cloud formation which forms a tight feedback-loop with the local temperature but also the local gas phase composition. The local gas phase is further affected by the external high-energy radiation, including stellar energetic particles and cosmic rays. I will demonstrate why gas giant exoplanets are exciting objects that allow to study cold, cloud forming and hot, ionizing thermodynamic regimes in one and the same objects.

DK-ALM Pre-Talk: Sruthi M. Purushu

Photodetachment spectroscopic studies of cold, trapped negative ions

Time & Location: Tuesday, 28.01.2025, 16:30 h, HS C

Snacks will be provided in between the pre-talk and the colloquium.