

# Colloquium

**SFB 956**

Conditions and Impact of Star Formation

**19.11.2012**

Monday 2:00 pm

**Physikalische Institute Köln**

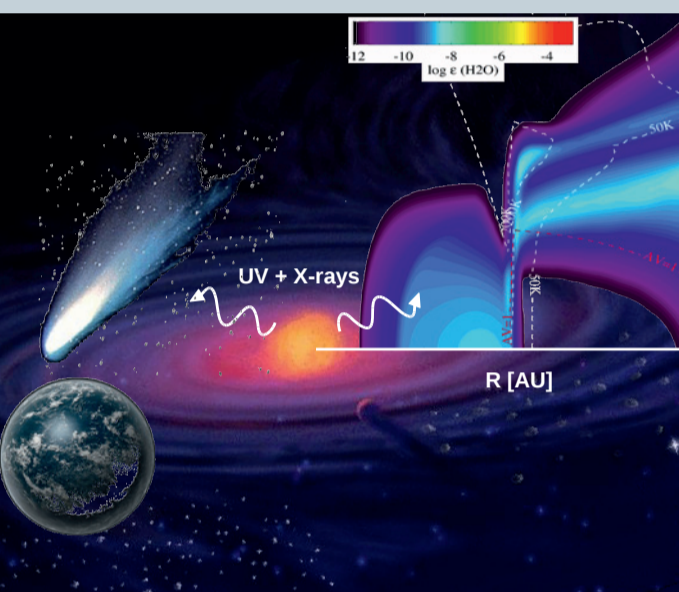
Lecture Hall I

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## Water in protoplanetary disks: steambath and/or dry desert?



The disks around young stars, protoplanetary disks, are thought to be the birthplaces of planetary systems such as our own. Spitzer and ground-based observations showed in several cases the existence of water in such disks around young stars, hence inspiring the discussion of how much water vapour and ice is present to form gas giant planets, water worlds, but also to deliver the Earth oceans and eventually lead to the emergence of life.

One of the goals of the GASPS Open Time Key Program (PI: B.Dent) is the detection of water in young protoplanetary disk systems. We detected water using the PACS instrument in several protoplanetary disk systems, young T Tauri as well as Herbig stars and also in the more mature system TW Hya. This is currently the highest water detection rate on class II/III objects obtained with Herschel. Resolved line profiles from HIFI observations from the WISH key program and our own follow-up observations help us to distinguish between various possible origins of the water emission.

I will discuss the interpretation of the various observations, using a variety of tools: simple LTE slab models, shock models, thermo-chemical disk models, and a large grid of parametrized disk models, DENT (Disk Evolution with Neat Theory), which was generated using a pipeline of the Monte Carlo RT code MCFOST and ProDiMo.