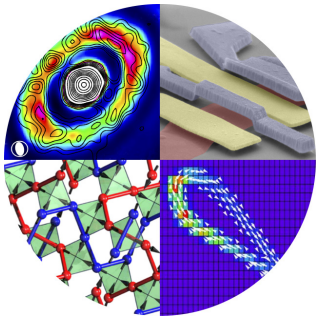

Münchner Physik-Kolloquium

Winter 2016/17

Building planets – a journey along 40 orders of magnitude

Dr. Til Birnstiel, *Max Planck Institute for Astronomy, Heidelberg, Germany and Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA*

Monday, 14 November 2016, 17:15 h
Hörsaal H 030, Fakultät für Physik der LMU, Schellingstraße 4, München

Building planets is a dirty business. First of all, planets are made out of the dirt we call interstellar dust. Secondly, the physics involved is not ‘‘clean’’ in a sense that neither all the forces and effects involved, nor all the initial conditions of this process are known. Solid state physics, radiation transport, gas phase and surface chemistry, magnetic fields and hydrodynamic instabilities at high Reynolds numbers are just some of the aspects that are certainly involved in growing the sub-micrometer sized interstellar dust by 40 orders of magnitude in mass to a full-grown planet. Given this complexity and dynamic range, it is perhaps not surprising, that the formation processes of planets are still poorly understood, even though thousands of planets beyond our solar system are known today. In this talk, I will focus on the early stages of planet formation: how to grow the asteroid sized building blocks of planets out of sub-micrometer sized dust. I will discuss the basic theoretical concepts, the problems we are facing, and outline how they might be overcome. I will also show recent observational results that are currently revolutionizing this exciting field and show how they are not only a big step towards solving the puzzle of planet formation, but also how they trace effects that critically affect the future habitability of the forming planets.

Student event: Meet the speaker

*We invite you to a **student-only** discussion-round with Dr. Til Birnstiel before his Munich Physics Colloquium talk.*

Be curious and feel free to ask any question.

Monday, 14 November 2016, 16:00 h
Room H U123 (basement), Fakultät für Physik der LMU, Schellingstraße 4, München