

# Colloquium

**SFB 956**

Conditions and Impact of Star Formation

**13 November 2017**

Monday 3:00 pm

**Physikalische Institute Köln**

Lecture Hall III

Zülpicher Straße 77 | 50937 Köln

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## **The Role of Turbulence in Star Formation: from Dense Cores to Disk Formation**

A detailed understanding of star-formation is important to establish the „micro-physics“ involved in the galactic star-formation relations, but also to determine the initial condition for proto-planetary disks. One of the important steps in the star-formation process is the accumulation of material from the molecular cloud with supersonic motions into the dense cores, which have subsonic turbulence. The first direct observation of the transition between supersonic and subsonic turbulence in a nearby cloud provided the first direct constraints on this dissipation process. I'll show the latest efforts on how to determine the scale at which turbulence is dissipated and how fragmentation of dense cores is enabled by turbulence. I will describe how these initial results explored in other regions, thanks to a new large program at the Green Bank Telescope (~250hrs, PIs: Jaime Pineda and Rachel Friesen). Now, ALMA observations present us with a new window to directly test the formation mechanism of dense cores, for which we present the initial results. Finally, I will show how does the turbulence affects the initial conditions of disk formation, by studying the transport of angular momentum in the envelope of young protostars, and how new ALMA observations will allow us to constrain this transport down to the scales relevant for disk formation.