

# Colloquium

**SFB 956**

Conditions and Impact of Star Formation

**06.06.2016**

Monday 3:00 pm

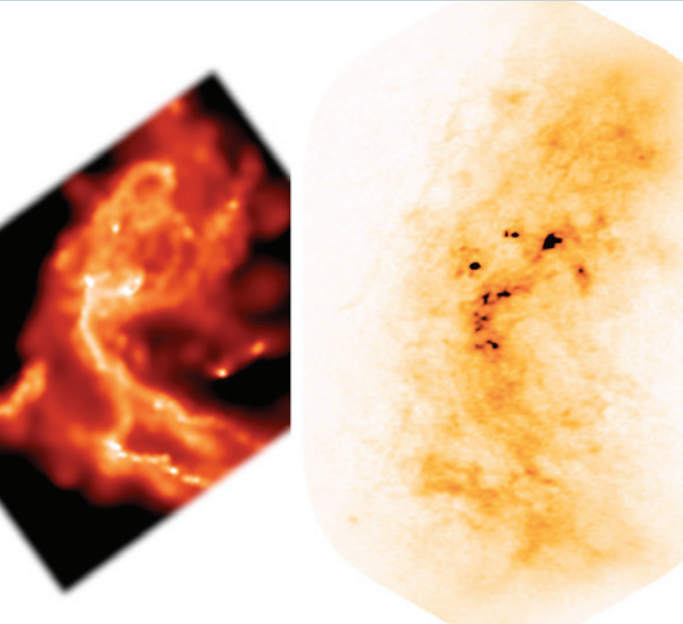
**Physikalische Institute Köln**

Lecture Hall III

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## **A theoretical understanding of the Central Molecular Zone: star formation cycles, instabilities, turbulence driving, circumnuclear streams, and an absolute time sequence of protocluster clouds**

The Central Molecular Zone (CMZ, i.e. the central 500 pc of the Milky Way) contains the largest concentration of high-density molecular gas in the Galaxy, but forms stars at a rate 10-100 times lower than expected based on commonly-used star formation relations. I will discuss our team's recent observational and theoretical efforts aimed at understanding how the nearest galactic nucleus forms its stars. These results show that star formation in the CMZ is episodic and is currently at a star formation minimum. I will present a self-consistent model for the duty cycle of gas inflow, star formation, and feedback in galactic nuclei, which successfully reproduces the main features of the Galactic CMZ as well as the star formation statistics of extragalactic nuclei. Finally, I will present a first look on how the conditions in the CMZ promote the formation of the densest young massive clusters in the Galaxy, and on how they reveal the physics of star formation and feedback under the conditions seen in high-redshift galaxies.