

Großes Physikalisches Kolloquium an der Universität zu Köln



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Molecular Clouds: Blueprints of the Cosmos

The universe is built from a hierarchy of structures that span vast physical scales — from the immense filaments of the cosmic web to galaxies, stars, and planetary systems. At the heart of this cosmic architecture lie molecular clouds, cold and dense reservoirs of gas and dust that serve as the blueprints for star and planet formation. Over recent decades, our understanding of how such complexity emerges has deepened, revealing the crucial interplay between large-scale accretion flows and small-scale feedback processes, particularly those linked to stellar birth.

Because star formation is confined to the molecular phase of the interstellar medium (ISM), the evolution of galaxies is intimately tied to the formation, dynamics, and lifecycle of molecular clouds. These clouds not only regulate the star formation process but also act as critical links between the smallest and largest scales of galactic ecosystems. Observational constraints from molecular and atomic gas have significantly shaped our current models, yet many fundamental questions remain about the physical and chemical mechanisms that govern these structures.



Motivated by this, in this talk I aim to illuminate the role of molecules and molecular clouds in shaping galactic evolution.

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16³⁰ Uhr
HS III