

Launch Event SFB “Dark UNiverse Explorations”



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Simulating the Universe

A talk by

Univ.-Prof. Dr. Oliver Hahn and Dr. Sylvia Ploeckinger
SFB DUNE Subproject Leads at Vienna University

Modern cosmology increasingly relies on numerical experiments to trace structure formation across cosmic time and shed light on dark matter, dark energy, and cosmic inflation. In part one, Oliver Hahn will discuss state-of-the-art cosmological simulations and recent advances in field-level inference - forward-modelling the Universe to fit large-scale structure data, enabling unprecedented constraints on cosmological parameters and initial conditions.

In part two, Sylvia Ploeckinger will present results from the novel COLIBRE suite of high-resolution hydrodynamical simulations that self-consistently model galaxy formation and evolution, as well as their connections to the dark Universe, within a fully cosmological context.

The DISCO project

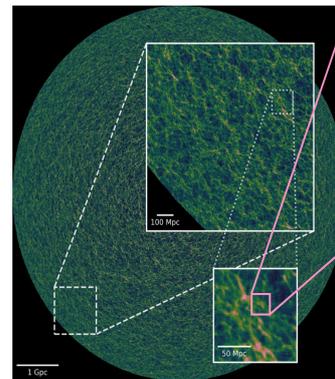


Image credit: Lukas Winkler

The COLIBRE project

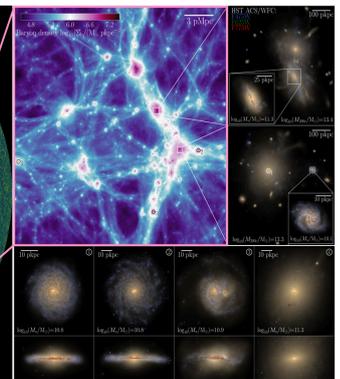


Image credit: The COLIBRE team; Schaye et al. (2025)



Tuesday, 10 March, 16:30



HS C, Victor-Franz-Hess-Haus

Program:

- 16:30 – Welcome & Overview of the SFB
- 17:10 – Break with refreshments
- 17:30 – Colloquium Talk: “Simulating the Universe”

Organizers:

Katrin Erath-Dulitz, Francine Marleau, Hanns-Christoph Nägerl

