

Physikalisches Kolloquium
Einladung**Physics Colloquium**
Invitation**Monday, 10 November 2025**

Lecture Hall N24/H13, at 16:15

Coffee and cookies will be served in front of the lecture hall from 16:00

Cosmography: map making on cosmological scales**Dr. Noam Libeskind****Leibniz Institute for Astrophysics Potsdam (AIP),
Potsdam, Germany** <https://www.aip.de/de/members/noam-libeskind/>

Matter in the Universe is not distributed uniformly but instead forms a complicated multi scale network known as the cosmic web. Mapping the cosmic web is complicated because despite the enormous abundance of galaxies and stars, these constitute only a small fraction of the total matter in the universe. Furthermore, the Universe is a dynamic entity, expanding and evolving in time. Yet how Galaxies are distributed and how these move, can tell us not only what the universe looks like in qualitative way, but can also help constrain fundamental cosmological parameters such as the speed of the expansion (Hubble's constant), the cosmological bulk flow or the amount of matter in the Universe. In this talk, I will discuss how one makes maps of matter in the Universe and how these can be used to provide independent constraints on cosmological parameters. I will describe how - as far as we can tell - our measurements have not yet reached the "Copernican scale" on which the universe is supposedly uniform. Lastly, I will describe how such maps can be used to run simulations of cosmic structure formation to gain insight on how our cosmic neighborhood formed.

