

Cosmological Self-exploration:

The Formation of our Galaxy and the Gaia Satellite Mission

Prof. Dr. Hans-Walter Rix

Max-Planck Institut für Astronomie, Heidelberg

Understanding our Milky Way has broad implications for galaxy formation, as it happens to be an extremely typical galaxy. From our vantage point within, we can study our Galaxy's stellar body in eight or more dimensions, which allows unparalleled constraints on its formation history and on the nature of dark matter. A sequence of new Milky Way surveys have made for an observational data revolution, which will culminate with the information from ESA's Gaia mission to be launched this fall. But already now it is a stimulating and hard challenge to confront cosmological simulations and dynamical models with these new data for a clearer understanding of how disk galaxies formed, and for qualitatively new constraints on dark matter. I will show what has been learned in the last years, and what Gaia should do for us.