

# Shedding light on high-redshift galaxies with the 21cm signal

Anne Hutter

Kapteyn Astronomical Institute, The Netherlands

**Abstract.** Reionization represents an important epoch in the history in the Universe, when the first stars and galaxies gradually ionize the neutral hydrogen in the intergalactic medium (IGM). Understanding the nature of the ionizing sources, the associated ionization of the IGM, and its impact on subsequent structure formation and galaxy evolution by means of radiative feedback effects, represent key outstanding questions in current astrophysics. High-redshift galaxy observations and simulations have significantly extended our knowledge on the nature of high-redshift galaxies. However, essential properties such as the escape fraction of ionizing photons from galaxies into the IGM and their dependency on galactic properties remain essentially unknown, but determine significantly the distribution and time evolution of the ionized regions during reionization. Analyzing this ionization topology by means of the neutral hydrogen sensitive 21cm signal with radio interferometers such as SKA offers a complementary and unique opportunity to determine the nature of these first galaxies. I will show results from a self-consistent semi-numerical model of galaxy evolution and reionization, and discuss the potential of inferring galactic properties with the 21cm signal as well as the impact of reionization on the high-redshift galaxy population and its evolution.

---