

# Numerical simulations keeping up with the complexity of radio discoveries

*Wednesday, 8 May 2024 11:00 (15 minutes)*

In the latest few years, a series of exciting discoveries by SKA's precursors and pathfinders have made the life of theorists harder, by showing that a plethora of new complex information must be accounted for in order to explain observations: the topology of magnetic fields, the actual details of their origin, the complex life cycle of radio galaxies within their halos, the time dependent evolution of relativistic particles across many different cycles of re-acceleration events.

In this contribution, I will show how numerical simulations are trying to keep up with this complexity, by designing new methods and resorting to large High Performance Computing facilities, in order to couple cosmological evolution with the new necessary ingredients (e.g. seeding from radio galaxies, ubiquitous Fermi acceleration processes, role of different magnetic field seeding processes) and with the new tough requirements on volume coverage and on the spatial and spectral resolution posed by future SKA surveys.

## keywords

cosmological simulations, radio emission, polarisation, radio galaxies

## In-person or online?

in-person

## Career level

Mid-Senior

**Primary author:** VAZZA, Franco (Università di Bologna)

**Presenter:** VAZZA, Franco (Università di Bologna)

**Session Classification:** Techniques