

Abstract:

We have entered a new era of radio astronomy with the development of sophisticated megahertz-sensitive telescopes. With these telescopes, we can now sample the spectrum of a radio source over several orders of magnitudes and at a level of detail never before achievable. The ability to accurately sample radio spectra over such a large range of frequency space has opened up new ways of investigating the evolution of radio galaxies.

In this talk I will introduce the Murchison Widefield Array (MWA) and Low Frequency Array (LOFAR), and the all-sky surveys being conducted by these facilities. I will focus on the key issues that are driving the development of these types of telescopes, such as understanding the life cycle of radio galaxies. In particular, our understanding of the formation and early evolution of radio galaxies is incomplete. These low frequency telescopes are well suited to resolving long running debates in this field, such as why are there some many more compact galaxies relative to large galaxies? I will conclude my talk discussing the development of the Square Kilometre Array (SKA), the next generation radio telescope that will fundamentally alter what we understand about the large-scale Universe.