

The Square Kilometre Array

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Talk starts at 7.30 pm in the Royal Society of Edinburgh, 22 - 26 George Street, with refreshments from 7.00 pm



Talk abstract: The Square Kilometre Array (SKA) will be the premier instrument to study the thermal and non-thermal radiation at centimetre and metre wavelengths from the cosmos, in particular from the most abundant element in the universe, neutral hydrogen. Its science impact will be widely felt in astro-particle physics and cosmology, fundamental physics, galactic and extragalactic astronomy, solar system science and astrobiology.

The SKA will have a collecting area of up to one million square metres spread over at least 3000 km, providing a sensitivity 40 times higher than the Jansky Very Large Array. Its instantaneous reception pattern on the sky will be several tens of square degrees, many times that of existing instruments, with potentially several large (100 square degree), independent fields-of-view for multiple simultaneous users. The SKA will be an extremely powerful survey telescope with the capability to follow up individual objects with high angular and time resolution.

The SKA design involves parabolic dishes with innovative feeds to maximize a combination of spatial and frequency coverage, and, at the lower frequencies, phased arrays that offer new operational capabilities. Much of the required technology is currently being developed in the course of specific design studies and the construction of several SKA Pathfinder instruments around the world. The talk will summarise the science case for the SKA, and provide an update on the design, prototyping, and site development activities.