

## LOFAR and SKA: - cosmology driving technological innovation

### Ray P. Norris

Deputy Director, CSIRO Australia Telescope National Facility, Director, Australian Astronomy MNRF,  
PO Box 76, Epping NSW 1710 Australia

Email Ray.Norris@csiro.au

### Abstract

The next-generation radio telescopes will let us see the first stars and galaxies forming in the early Universe. Conceiving, designing and building these instruments will also stimulate technological innovation.

Australia is a world leader in astronomy. Australia also has a relatively *radio-quiet* environment - an outstanding natural advantage for radio astronomy. As a result, inland Australia is now being considered as a host site for three future projects: LOFAR (Low Frequency Array), the SKA (Square Kilometre Array), and a NASA Deep Space Network (DSN) facility. The first of these is LOFAR, which will be built within the next five years.

The A\$200m internationally-funded LOFAR project offers Australia:

- ◆ The chance to host an international, high-visibility *big science* project;
- ◆ The chance to engage Australian industry in international projects at the leading edge of information and computing technologies; and
- ◆ An increased likelihood of attracting the two-billion-dollar SKA project to Australia. LOFAR is a direct developmental step towards SKA.

LOFAR will consist of a 400km-wide array of 25000 antennas covering the range 20-240 MHz, and will pose a number of challenges in RF engineering, signal processing and transport, and ionospheric calibration. Papers are invited that will address all aspects of these challenges, especially in innovative ways.