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Low Noise Front Ends for the New cm Wave Radio Telescopes



Dr. Neil Roddis

Dr. Neil Roddis worked for more than 25 years in design and commissioning of low noise receiver systems, mostly at Jodrell Bank Observatory in the UK. Before this he worked on the design of satellite ground stations for commercial applications. More recently he was part of the SKA Program Development Office, where he was responsible for the Dish Array development programme. Since leaving the SKA in 2011 he has worked as R & D Manager at company in France that produces cryogenic LNAs, and more recently for a UK company specialising in the design and manufacture of automated test equipment.

Abstract

Radio astronomy engineers have designed and built the most sensitive cm wave receivers in the World over the past 30 to 40 years, using state-of-the-art components and cryogenic cooling techniques. Whilst the performance of these receivers remains very impressive, this performance comes at a high cost, both for manufacturing and operation. Future radio telescopes may require different approaches to the challenge of designing reliable low noise receivers, with minimum maintenance and low running costs. Examples include the Square Kilometre Array, which will need thousands of receivers in remote locations, and FAST, which will also be in a remote location and where access to the receivers will be difficult.



The talk will review some of the techniques available to achieve low noise at cm wavelengths, and examine the potential lifetime costs including manufacture, maintenance and power consumption.

All are welcome! Tea, coffee, biscuits will be served at 2:15 P.M.

You are welcome to nominate speakers to Weimin Yuan (wmy@nao.cas.cn), Mei Zhang (zhangmei@bao.ac.cn), Licai Deng (licai@bao.ac.cn), Xuelei Chen (xuelei@cosmology.bao.ac.cn), Shude Mao (smao@nao.cas.cn)