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# 国台学术报告 NAOC COLLOQUIUM

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**Time: Wednesday 2:30 PM, Dec. 21st Location: A601, NAOC**

## **Development of Superconducting Mixers and Detectors**

**for the DATE5 Telescope**

**Prof. Sheng-Cai Shi**

**Purple Mountain Observatory (PMO), CAS**



Prof. Sheng-Cai Shi graduated from the Department of Radio Engineering of Southeast University in 1985, master's degree from PMO in 1988, PhD in 1996 from Japan Graduate School of Comprehensive Research. He was selected as the Distinguished Young Scientists by National Science Foundation of China in 1998, "foreign talent introduction program" by the Ministry of Finance in 1999, also "Millions of Talents Project" by the Ministry of Personnel in the same year. He is now the Director of Radio Astronomy Laboratory of the Chinese Academy of Sciences, Director of the Academic Committee of Purple Mountain Observatory, Institute of Radio Astronomy, deputy director of the Chinese Institute of radio astronomy, deputy director of the International Space terahertz technology ISSTT annual scientific committee since 2008. Prof. Shi is mainly

engaged in research on the physics and technology for the terahertz-band high-sensitivity superconducting detector. He and his collaborators have proposed and developed the chip concept of distributed superconducting tunnel junction array, which has been widely used in several telescopes, e.g., ALMA, ISS JEM/SMILES, and DATE5, and so on.

### **Abstract**

The terahertz (THz) and FIR band is a frequency regime to be fully explored in astronomy. However, water vapor renders the terrestrial atmosphere opaque to this band over nearly all of the Earth's surface. Dome A in Antarctic – the site for China's Antarctic Observatory, with an altitude of 4093 m and temperature below -80 Celsius degree in winter, may offer the best possible access for ground-based astronomical observations in the THz and FIR band. We recently carried out measurements of atmospheric radiation from Dome A spanning the entire water vapor pure rotation band from 20  $\mu\text{m}$  to 350  $\mu\text{m}$  wavelength by an unmanned Fourier transform spectrometer (FTS). Our measurements expose atmospheric windows having significant transmission throughout this band. This talk will firstly introduce our FTS measurement results from Dome A, and then the latest development of superconducting mixers and detectors for the DATE5 telescope proposed to build at China's Antarctic Observatory.

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