The Terahertz (THz) regime is of particular interest in astronomy as one can observe radiation from early distant, cold, and dusty objects, which are mostly invisible in the optical/NIR regime. It, however, is still a frequency band to be fully explored as water vapor renders the terrestrial atmosphere opaque over nearly all of the Earth’s surface. China is going to launch a space station around 2022, providing a good opportunity for the development of China’s space astronomy. And there will be a 2-m optical telescope flying simultaneously with the space station in common orbit. Five astronomical instruments including high-sensitivity terahertz detection module (HSTDM) have been selected onboard the 2-m optical telescope facility. The HSTDM, focusing mainly on the observations of neutral carbon (CI) and other molecular lines for the understanding of star formation, is mainly a 500-GHz niobium-nitride (NbN) superconducting-tunnel-junction (SIS) heterodyne receiver [1] operated at a temperature of 8-10 K, which is provided by a closed-cycle 2-stage pulse-tube cryocooler [2]. In addition, the possibility of adding a THz Schottky receiver onto HSTDM is taken into account. Detailed designs and testing results will be presented.

REFERENCES


NOTES:

1 Purple Mountain Observatory, Chinese Academy of Sciences, Nanjing 210033, China.
2 Key Lab of Radio Astronomy, Chinese Academy of Sciences, Nanjing 210033, China.