

Cryogenic Mixers for Radioastronomical Radiometers from 660 to 810 GHz

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The Max Planck Institute for extraterrestrial Physics has operated a radioastronomical spectrometer system in the highest-frequency atmospheric windows for the past six years. This system is now in routine use at the James Clerk Maxwell Telescope on Mauna Kea. In the course of optimizing the system sensitivity we have extensively characterized the Schottky diode mixers and have developed an experimental 691.5 GHz SIS front end. We will briefly describe the overall spectrometer and the important constraints for radio astronomical applications, discuss our measurements of Schottky diode mixer parameters, and will present results from the SIS work including nonequilibrium effects from pair breaking by LO pump photons with energy above the Nb gap.

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