Japan Geoscience Union Meeting 2010
(May 23-28 2010 at Makuhari, Chiba, Japan)

PEM030-P02 Room: Convention Hall Time: May 26 17:15-18:45

Development of numerical simulation code for THz band superconducting hot-electron bolometer mixer designing

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THz region is an unexplored frequency band in heterodyne sensing technology fields, since a conventional SIS mixer cannot operate due to superconducting Cooper pair breakdown by photon absorption in the THz band. To overcome this obstacle, we are developing an alternative THz-band heterodyne device known as a hot electron bolometer mixer (HEBM) device. However, physical processes in this device are not yell completely understood. Thus we develop a new numerical simulation code to understand physical processes in the HEBM device,which aims to improve the efficiency of device designing. In this meeting we will present the preliminary results on the development of the numerical simulation code for the HEBM device.

Keywords: detector, superconductor, teraherz, Heterodyne Sensing, Radio Astronomy