Abstract Details

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Title: Submillimeter wave program at PRL, India

Abstract:

Interest in the Submillimeter (SMM) frequency range for astronomy a atmospheric chemistry has potentially boosted the building of new generation telescopes and associated instrumentation. While planetar atmospheres have been extensively studied in the centimeter and mil wavebands, the submillimeter spectral region has, until recently, rem largely unexplored. Unlike infrared spectra, spectra taken at millimete submillimeter wavelengths contain relatively few spectral lines, which consequently well separated. SMM frequencies usually provide spectra are the most sensitive to species with small abundances. However, th technical difficulty in constructing radio telescope sized antennae with precision required for SMM observations, combined with the low terre transmission at SMM wavelengths, has impeded progress. In the dens atmospheres of the jovian planets, the full-width at half maximum of collisionally broadened lines can reach several to several tens of GHz wavelengths. In order to detect these highly pressure-broadened line receiver with wide frequency coverage is necessary. Concerning the s we are developing state-of-the-art high resolution heterodyne receive system at our institute, which will be used to study the atmospheric chemistry of Jovian planets including ozone chemistry, mechanism of collapse, molecular cloud composition and chemistry. Proto type of th system is being built, its operating range is very broad i.e. from seve hundred GHz to few THz. Also laboratory spectroscopy of some atmos molecules is in progress. For the same exercise, all theoretical aspect already been analysed. To avoid the limitations imposed by atmosphe SMM frequencies, we are planning for balloon based experiment using national balloon facility. Payload construction for the same is underwa this talk, the ongoing SMM group activities at our institute will be summarized

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