

## JEM/SMILES algorithm development and data processing system

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<http://www2.nict.go.jp/y/y222/THz/>

A new generation of submillimeter-wave spectrometers employing sensitive SIS (Superconductor-Insulator-Superconductor) detector technology provide new opportunities for accurate measurements of stratospheric molecules at global scale. The space-station-borne JEM/SMILES (Japanese Experiment Module/Submillimeter-wave Limb Emission Sounder) instrument has plan to launch in the summer 2009. The measured detector noise temperatures are close to 500K in frequency bands around 625 and 650GHz submillimeter region. This value is 20 times better than Schottky diode mixers.

We present the SMILES research data processing system. Also, a purpose of this study is to obtain the theoretical capabilities of JEM/SMILES using simulated limb-sounding measurements, since the precision of the molecular abundance observed is no longer limited by the sensitivity of the detector but several other effects, for example, the accuracy of the molecular pressure broadening parameters. Nonlinear retrievals are performed to retrieve the O<sub>3</sub>, HCl, ClO, HNO<sub>3</sub>, HO<sub>2</sub>, and temperature profiles simultaneously from the three spectral band, 624.32-625.52 GHz, 625.12-626.32GHz, and 649.12-650.32 GHz, respectively, for the error from the instruments, the molecular parameters, and so on.

図 1 : SMILES アルゴリズム開発

