

Early Results from the MIRO Instrument at Comet Churyumov-Gerasimenko

S. Gulkis (1,2), M. Allen (1), P. Von Allmen (1), G. Beaudin (3), N. Biver (3), D. Bockelee-Morvan (3), M. Choukroun (1), J. Crovisier (3), P. Encrenaz (3), T. Encrenaz (3), M. Frerking (1), P. Hartogh (4), M. Hofstadter (1), W. Ip (5), M. Janssen (1), C. Jarchow (4), L. Kamp (1), S. Keihm (1), S. Lee (1), E. Lellouch (3), C. Leyrat (3), L. Rezac (4), F.P. Schloerb (6), and T. Spilker (7)

(1) Jet Propulsion Laboratory/California Institute of Technology, California, USA (2) samuel.gulkis@jpl.nasa.gov / Fax: +1-818-3548895 (3) Observatory of Paris, Meudon, France (4) Max Planck Institute, Gottingen, Germany (5) Institute of Astronomy and Space Science, Jhongli, Taiwan (6) University of Massachusetts, Massachusetts, USA (7) Solar System Science and Exploration, California, USA

Abstract

The MIRO (Microwave Instrument on the Rosetta Orbiter) is a dual frequency (560 GHz and 190 GHz) heterodyne instrument containing a broadband channel for continuum measurements at each frequency, and a very high resolution (44 kHz, 4096 channel) spectrometer interfaced with the submillimeter radiometer. The spectroscopic receiver is fixed tuned to measure simultaneously 8 molecular transitions of water, carbon monoxide, ammonia, and methanol. The continuum channels probe the nucleus sub-surface, while the spectrometer is sensitive to gas abundance, velocity, and temperature. One of the goals of the MIRO experiment is to better understand details of the relationship between the nucleus and the coma. This paper will present pre-encounter measurements of Comet Churyumov-Gerasimenko made with the MIRO instrument.

Acknowledgements

The authors acknowledge the Rosetta Project (a European Space Agency mission with the participation of the National Aeronautics and Space Administration). Part of this work was carried out at the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.