



## **Planned Spectroscopic Measurements with the MIRO instrument on Rosetta in the May-November 2014 time frame**

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The Microwave Instrument for the Rosetta Orbiter (MIRO), on board the European Space Agency (ESA) Rosetta spacecraft, will observe spectral lines of  $\text{H}_2^{16}\text{O}$ ,  $\text{H}_2^{17}\text{O}$ ,  $\text{H}_2^{18}\text{O}$ ,  $\text{CO}$ ,  $\text{CH}_3\text{OH}$ , and  $\text{NH}_3$  from the outer coma ( $>1,000,000$  km) to the inner coma region ( $<1,000$  km) of Comet 67P/Churyumov-Gerasimenko in 2014-2015 and possibly beyond. The scientific objectives of the MIRO spectroscopic observations are to retrieve the gas production rates, relative abundances, velocities, and excitation temperatures of the  $\text{H}_2\text{O}$ ,  $\text{CO}$ ,  $\text{CH}_3\text{OH}$ , and  $\text{NH}_3$  volatiles, and the isotopologue ratios of  $\text{H}_2^{16}\text{O}$ ,  $\text{H}_2^{17}\text{O}$ , and  $\text{H}_2^{18}\text{O}$ . Data obtained with the MIRO instrument will also be used to support the Rosetta lander team and spacecraft operation team by providing  $\text{H}_2\text{O}$  gas densities and expansion velocities for the Rosetta lander Philae landing site selection process and the Rosetta orbiter trajectory maneuvers near close flybys. This talk reports on the planned scientific and operation-support MIRO observations in the May-November 2014 time frame, and how the observations will be interpreted in order to retrieve coma parameters.