



High Resolution and Stereo Channels of the SYMBIO-SYS instrument for BepiColombo

G.Cremonese (1), L.Colangeli (2), M.T.Capria (3), E.Epifani Mazzotta (2), V.Da Deppo (4), G.Marra (2), M.Massironi (4), G.Naletto (4), P.Palumbo (5), S.Debei (4), E.Flamini (6), and the SIMBIOSYS international team

1. INAF-OAPD, Italy
2. INAF-OAC, Italy
3. INAF-IASF, Italy
4. Universita' Padova, Italy
5. UNiversita' Parthenope, Napoli, Italy
6. ASI, Italy

The new ESA cornerstone mission, BepiColombo, will explore the planet closest to the Sun and the harsh environment of Mercury will strongly affect the resources allocated to the payload.

At the same time the scientific objectives are very challenging, requiring, in particular for the camera system, to collect very high resolution images of a fraction of the surface and stereo images of the entire surface.

The SIMBIOSYS instrument is composed by a Visible and Infrared Hyperspectral Imager (VIHI), the High Resolution Imaging Channel (HRIC), and the Stereo Channel (STC). This work will describe the concepts of HRIC and STC.

Despite the limited mass allocated to SIMBIOSYS (much lower than in previous imaging systems), the performance nominally achieved are very good. The angular resolution of the HRIC is 12.5 microrad/px, comparable to the nominal value of HRSC on Mars Express (9 microrad/px) and better than OSIRIS on Rosetta (18.1 microrad/px), while the STC will provide images at an angular resolution of about 113 microrad/px and a Digital Terrain Model with elevation accuracy of about 75 m. This

implies that new design and new technologies have to be used, as for instance the Active Pixel Sensor, based on CMOS technology, as detectors. Moreover, the observation strategy will have an important role on achieving the scientific objectives, as the push-frame technique adopted by STC in order to improve the stereo reconstruction result.