



## **MERTIS – the design of a highly integrated IR imaging spectrometer**

I. Walter, H. Hirsch, H. Jahn, T. Säuberlich, W. Skrbek, H. Venus (1)

J. Knollenberg (2)

German Aerospace Center,

(1) Optical Information Systems,

(2) Institute of Planetary Research

Rutherfordstr. 2, 12489 Berlin, Germany

(ingo.walter@dlr.de, fax ++49 30 67055 532, phone ++49 30 67055 186)

A belief that Mercury carries unique clues to the origin and evolution of the Solar System has driven the interest for detailed studies of the innermost planet. Here surface mineralogy requires information of the thermal inertia asking for observations by space borne instruments in the near IR and the thermal IR domain.

With a background of several instrument developments in the past the German Aerospace Center in Berlin proposed for ESA's deep space mission BepiColombo an imaging spectrometer which meets the challenges of limited technical resources and a very special operational environment. An 80-channel push broom-type spectrometer has been drafted and its development has been started under the name MERTIS (MERCURY Thermal Infrared Spectrometer).

It is based on modern European un-cooled micro-bolometer technology and all-reflective optics design. The operation concept principle is characterized by intermediate scanning of the planet, free space and black bodies as calibration targets. A miniaturized radiometer is included for low level temperature measurements. Altogether the system shall fit into a CD-package sized cube and weigh less than 3 kg.

The paper will present the instrument architecture of MERTIS, its design status and results of laboratory investigations with the first components being built.