



1 Summary of the testing results of the proto-type receiver telescope and the detector electronics for the BepiColombo Laser Altimeter (BELA)

K. Marti, S. Chakraborty
University of Bern, Switzerland

BELA is designed to fly on the BepiColombo space mission to Mercury. BELA uses direct detection to determine topographic variations of the planet surface. The proto-types of the receiver telescope, the baffle and the detector electronics were tested. The baffle will be used to protect the receiver part from stray light and thermal radiation. The telescope will focus the return pulse onto the detector. The results of the testing will be presented in this poster.

The thermal testing of the baffle and the telescope were performed in a custom made Mercury simulator which was used to simulate a visible and infrared radiation environment on Mercury. The aim was to ensure that the telescope-baffle-system can withstand extreme heat load coming from Mercury. In addition, the optical performance of the telescope was verified to ensure that the return pulse can be detected.

To detect a return pulse a silicon avalanche photodiode (Si APD) will be used. The characteristics of the APD were tested and compared to the manufacturer's data. To verify the characteristics, the responsivity, the dark current and the noise were analysed. To check the temperature dependence of the APD characteristics all the measurements were performed in a temperature chamber. The aim was to select an appropriate APD for the proto-type range finding system.

Finally, the telescope-baffle-system and the detector electronics will be combined to perform range finding measurements.