



UV and VUV calibration capabilities at the Metrology Light Source for solar and atmospheric research

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The Physikalisch-Technische Bundesanstalt (PTB), Germany's national metrology institute, is responsible for the realization and dissemination of the legal units in Germany. Within this mission, PTB has been using synchrotron radiation for the realization of the radiometric units in the spectral range from the UV to the X-ray region for more than 25 years [1]. Prominent examples for calibration work using synchrotron radiation performed by PTB within the framework of solar or atmospheric research refer, e.g., to the SUMER and CDS spectrometers of the SOHO mission, the LYRA mission, or the SOL-ACES and the SOLSPEC instruments on ISS [2].

Recently, PTB has put a new 630 MeV electron storage ring into operation, the Metrology Light Source (MLS), located in Berlin-Adlershof, which is – besides many other applications – optimized for radiometry in the UV and VUV spectral region and thus substantially improves and extends the calibration capabilities, here. Several experimental stations are available for the characterization and calibration of detectors, radiation sources, optics or complete space instruments, either traceable to a cryogenic substitution radiometer as a primary detector standard or to the MLS as a primary source standard [3]. In the current contribution, an overview of the calibration methods and measurement facilities at the MLS are presented and examples for the characterization of space instruments in the UV and VUV spectral range as well.

- [1] B. Beckhoff et al., Phys. Status Solidi B 246, 1415 (2009).
- [2] M. Richter et al., Advances in Space Research 37, 265 (2006).
- [3] A. Gottwald et al., "Current capabilities at the Metrology Light Source", Metrologia (2012), submitted.