



SOLACER – A new auto-calibrating system to record solar spectral irradiance

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After about 50 years of solar spectral irradiance measurements from space, the precise measurement of it is still challenging as it requires a system to reliably track the instrument degradation over the full mission duration. Based on a systematic re-analysis of the requirements for future SSI measuring systems, the new, compact, and moderate-cost instrument SOLACER is proposed offering the possibility to improve the on-board monitoring of degradation effects to provide SSI data acquisition of significantly increased accuracy. To achieve this, an absolute radiometer along with ionization chambers of proven long-term stability serve as primary detector standards to determine the absolute SSI fluxes passing a series of narrow- and medium-band filters with updated transmission. Consecutively cross-calibrated Bolometers and photomultiplier tubes of high sensitivity are to be used as secondary detector standards. With this design, the new SOLACER instrument covers the spectral range from about 2 nm to 2800 nm with eight planar grating spectrometers.

SHORT BIO:

Gerhard Schmidtke, Born on 3rd March 1937 in Lyck/Germany, Gerhard Schmidtke started academic studies of physics at University of Rostock in 1956 receiving the diplom of physics at university of Freiburg in 1962 and the PhD in 1968.

In 1963 to 1964 Gerhard Schmidtke worked on a fellowship with Dr. Hans Hinteregger of AFGL Air Force in Cambridge, Massachusetts, USA in the field of upper atmospheric physics and the measurement of solar extreme ultraviolet radiation.

Thereafter, he was employed with the Institute of Physical Measuring Technique of the Fraunhofer Society for Applied Research, investigating solar, auroral, and XUV-EUV-VUV-VIS atmospheric radiations based on 14 rocket and 3 satellite experiments. From 2008 to 2017 the Solar Auto-Calibrating EUV/UV Spectrometer system was working aboard the International Space Station.

From 1980 to 1996 he worked also in the fields of tunable IR diode laser spectroscopy for atmospheric and trace gas measurements as well as for industrial applications, of UV derivative spectroscopy, and of contour mapping by laser radar techniques.

From 16th September to 8th October 1995 Gerhard Schmidtke followed an invitation by the Beijing University. After his retirement he is still working to develop an auto-calibrating spectrometer system to derive solar spectral irradiance of highest possible accuracy for climate modelling and other applications in the XUV through the IR spectral regions.

More than 150 papers have been published primarily in international journals.