

Consultative Committee for Photometry and Radiometry (CCPR)
25th Meeting (on-line 10-11 May 2022)

**CCPR member report on activities in radiometry and photometry since the last
CCPR meeting (2019)**

Reply from: PMOD

Delegate: Julian Gröbner

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1. Summarize the recent progress in your laboratory with respect to measurement standards, research projects, and metrology services to fulfill the demands of customers in:
 - (a) broad-band radiometric quantities:
EMPIR 19ENV07 METEOC-4 : Traceability of atmospheric longwave irradiance to SI through bilateral comparison with PTB. There is a need by the WMO community for a new service category for this quantity. Discussions have started within CCPR WG CMC during the last meeting in October 2021.
EMPIR 19ENV07 MetEOC-4: Adaptive diffraction correction depending on AOD and atmospheric water content developed for pyrheliometers (DNI solar irradiance), to be implemented with the Cryogenic Solar Absolute Radiometer CSAR.
 - (b) spectral radiometric quantities:
EMPIR 19ENV04 MAPP: Traceability of spectral solar UV irradiance to SI through calibration campaign at PTB.
 - (c) photometric quantities:
 - (d) other area(s) relevant to CCPR:
 2. What work in PR has been/will be terminated in your laboratory, if any, in the past /future few years? Please explain the reasons and provide the name of the institution if it has been/will be substituted by a DI or accredited laboratory.

reply
 3. Summarize the Capacity Building and Knowledge Transfer activities undertaken by your institute in photometry and radiometry (courses, training, ...):

Symposium and capacity building during the International Pyrheliometer Comparison (Sep-Oct 2021) on Solar irradiance and atmospheric longwave irradiance measurements.
IPC-XIII symposium.
 4. Summarize the research projects currently performed within a collaboration with one or more NMIs or Dis (name of the project, participants):

- EMPIR 19ENV04 METEOC-4 : Traceability of atmospheric longwave irradiance to SI with PTB.
 - EMPIR 19ENV04 MAPP: Traceability of spectral solar irradiance to SI through calibration campaign at PTB.
 - EURAMET 1106 : Traceability of spectral solar UV irradiance to SI, with PTB, ongoing.
 - Researcher Mobility Grant 18SIB10-RMG chipS-CALe : APPLICATION OF PQED IN THE ULTRAVIOLET WAVELENGTH RANGE FOR IMPROVED TRACEABILITY OF SOLAR UV IRRADIANCE MEASUREMENTS, with Justervesenet, Norway.
5. Are there any other research projects where you might be looking for collaborators from other NMIs or are there studies that might be suitable for collaboration or coordination between NMIs?

[reply](#)

6. Have you got any other information to place before the CCPR in advance of its next meeting?

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7. Bibliography of radiometry and photometry papers of your laboratory since the last CCPR (September 2019):

Egli, L., **Gröbner, J.**, Hülsen, G., Schill, H., and Stübi, R.: Traceable total ozone column retrievals from direct solar spectral irradiance measurements in the ultraviolet, *Atmos. Meas. Tech.*, 15, 1917–1930, <https://doi.org/10.5194/amt-15-1917-2022>, 2022.

N. Kouremeti, J. Gröbner, and S. Nevas, Stray-light correction methodology for the precision solar spectroradiometer, *J. Phys.: Conf. Ser.* 2149 012002, <https://iopscience.iop.org/article/10.1088/1742-6596/2149/1/012002/meta>, 2022.

Gregor Hülsen, Julian Gröbner, Daniel Pfiffner, Manfred Gyo, Natalia Kouremeti and Jakob Föller, Angular responsivity of ground-based and space-based direct solar irradiance radiometers, *J. Phys.: Conf. Ser.* 2149 012001, <https://iopscience.iop.org/article/10.1088/1742-6596/2149/1/012001/meta>, 2022.

Šmíd, M., Porrovecchio, G., Tesař, J., Burnitt, T., Egli, L., Gröbner, J., Linduška, P., and Staněk, M.: The design and development of a tuneable and portable radiation source for in situ spectrometer characterisation, *Atmos. Meas. Tech.*, 14, 3573–3582, <https://doi.org/10.5194/amt-14-3573-2021>, 2021.

D. Pavanello, R. Galleano, W. Zaيمان, M. Ankit, N. Kouremeti, J. Gröbner, K. Hoogendijk, M. Po, E.F. Lisboa, W. Alius, D. Dosenicova, I. Kroeger, D. Friedrich, E. Haverkamp, A. Minuto, E. Celi, M. Pravettoni, G. Bellenda, R. Fucci, Results of the IX International Spectroradiometer Intercomparison and impact on precise measurements of new photovoltaic technologies, *Prog. Photovol.*, <https://doi.org/10.1002/pip.3347>, 2020.

Hülsen, G., J. Gröbner, A. Bais, M. Blumthaler, H. Diemoz, D. Bolsée, A. Diaz, I. Fountoulakis, E. Naranen, J. Schreder, F. Stefania, J. M. Vilaplana Guerrero, Second Solar Ultraviolet Radiometer Comparison Campaign UVC-II, *Metrologia*, 57. 035501, <https://doi.org/10.1088/1681-7575/ab74e5>, 2020.

Gröbner, J., and N. Kouremeti, The Precision solar Spectroradiometer (PSR) for direct solar irradiance measurements, *Solar Energy* 185, 199-210, 2019.

Finsterle, W., Montillet, J. P., Schmutz, W., Šikonja, R., Kolar, L., Treven, L. 'The total solar irradiance during the recent solar minimum measured by SOHO/VIRGO', *Sci Rep* 11, 7835, <https://doi.org/10.1038/s41598-021-87108-y>