Consultative Committee for Photometry and Radiometry (CCPR)
23rd Meeting (22 - 23 September 2016)

Questionnaire on activities in radiometry and photometry

Reply from: Istituto Nazionale di Ricerca Metrologica (INRIM)

Delegate: Giorgio Brida

1. Summarize the progress in your laboratory in realizing top-level standards of:

    (a) broad-band radiometric quantities
    INRIM participated in EURAMET 448 comparison on UVA power meter

    (b) spectral radiometric quantities

    Spectral responsivity
    INRIM coordinated the joint research project SIB57 NEWSTAR "New primary standards and traceability for radiometry", aiming at developing a new primary standard for radiometry based on photoelectric effect in silicon photodiodes. INRIM takes part in all work packages and leaded work package 4 which were aimed at implementing room temperature primary standards (RT-PQED) in applications of photometry and filter radiometry including thermometry, at a 100 ppm uncertainty level; INRIM acted as pilot laboratory in the intercomparison of RT-PQED as travelling artefact for spectral responsivity intercomparisons.

    Metrology for single photon sources and detectors
    INRIM has coordinated the joint research project IND06 MIQC "Metrology for Quantum Communication" and is now coordinating the follow-up project 14IND05 MIQC2 Optical metrology for quantum-enhanced secure telecommunication; INRIM extended single photon activities to the realisation and characterization of single-photon sources based on colour centers in nanodiamonds.

    (c) photometric quantities

2. What other work has taken place in your laboratory in scientific or technological areas relevant to the CCPR?

INRIM coordinates the following ongoing EMRP projects in the technological areas relevant to the CCPR:

- New primary standards and traceability for radiometry (2013–2016)
- Optical metrology for quantum-enhanced secure telecommunication (2015- 2017)

INRIM participates in the following ongoing EMRP projects in the technological areas relevant to the CCPR:

- Multidimensional reflectometry for industry (2013–2016)
- Single-photon sources for quantum technologies (2013–2016)
- Metrology for Earth observation and climate II (2014–2017)

- Metrology for efficient and safe innovative lighting (2014–2017)
- Future photometry based on solid-state lighting products (2016-2018)

3. What work in PR has been/will be terminated in your laboratory, if any, in the past /future few years? Please provide the name of the institution if it has been/will be substituted by a DI or accredited laboratory.

   None

4. What are present, new or emerging needs of users of your services that are not being supported sufficiently by current CCPR activities or initiatives? In the light of this information please suggest desirable changes in the future working program of the CCPR.

   None

5. What priorities do you suggest for new research and development programmes at NMIs in the area of Photometry and Radiometry?

   Developing LED-based standards for solid-state light calibration for accurate measurements of illuminance, as they offer the possibility to use photometers without a V(lambda) filter.

6. Are there any 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?

   INRIM needs are largely covered by present EMRP Projects and future EMPIR ones

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

   No

8. Bibliography of radiometry and photometry papers of your laboratory since the last CCPR (September 2014)?

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