

## ANNUAL REPORT 2001/2002

### EUROMET Photometry and Radiometry TC

Antonio Corróns, Instituto de Física Aplicada (IFA-CSIC)

#### 1) General Aspects

The largest amount of work done in the CPs during the last year has been focused in the proposal and analysis of the CMCs declared by the EUROMET NMIs and by the NMIs of other RMOs. The 2<sup>nd</sup> set of the EUROMET PHORA CMCs was successfully finished and also the analysis of the other RMOs CMCs to be included in the BIPM KCDB in October 2001.

Simultaneously a significant workload has been caused by the various EUROMET Projects, mainly those classified as comparison and traceability projects among the EUROMET NMIs.

#### 2) Contact Persons Meeting

The annual contact persons meeting was held at METAS Bern-Wabern, Switzerland, April, 8th/9th 2002. It was attended by the following 27 persons:

Michael Matus	AUSTRIA
Marek Smid	CZECH REPUBLIC
Jan C. Petersen	DENMARK
Erkki Ikonen	FINLAND
Jean Bastie	FRANCE
Jürgen Metzdorf	GERMANY
Christos Bandis	GREECE
Tibor Gerlai	HUNGARY
Giorgio Brida	ITALY
Eric W.M. van der Ham	NETHERLANDS
Jarle Gran	NORWAY
Jerzy Pietrzykowski	POLAND
Olivier Pellegrino	PORTUGAL
Peter Nemecek	SLOVAK REPUBLIC
Antonio Corróns	SPAIN
Anne Andersson-Fäldt	SWEDEN
Peter Blattner	SWITZERLAND
Kamuran Türkoglu	TURKEY
Teresa Goodman	UNITED KINGDOM

Nikolay Alexandrov  
 Ojars Veismanis  
 Predrag Vukadin  
 Michael Stock  
 Werner Schmutz  
 Joaquin Campos  
 Rudolf Thalmann  
 Jacques Morel

BULGARIA  
 LATVIA  
 YUGOSLAVIA  
 BIPM - CCPR  
 PMOD-WRC  
 IFA-CSIC  
 METAS  
 METAS

The meeting was held at the time when the review of the 2<sup>nd</sup> Round of EUROMET PHORA CMCs was starting. It was agreed to continue the review of the CMCs using the same acceptance criteria used in the previous reviews. At the time to write this report 11 EUROMET NMIs have sent new CMCs tables to be reviewed.

During the CPs meeting there was a change of information about the EUROMET QS-Forum and the degree of implementation of the ISO/IEC 17025 standard in the EUROMET NMIs.

Information about the Maintenance of the EUROMET PHORA CMCs was discussed too.

It was agreed to accept the proposed comparison EUROMET new Project “Intercomparison of Chromatic Dispersion Reference Fibres” proposed by METAS.

### 3) Projects

#### 3.1. EUROMET Projects

At the present time there are 24 EUROMET PHORA projects:

- 9 are traceability projects
- 10 are comparison projects
- 3 are co-operation projects
- 2 are consulting projects.

#### Agreed comparison projects

Projects co-ordinators underlined.

156. Comparison of high laser power (DE GB, FR, SE, DK, PL, UA, NL, CH RO, US).  
 Active. Change of chair.

353. Transmittance measurements of V ( $\lambda$ ) filter (SE DK FI FR NL). Completed. SE will write the final report.

538. EUROMET Key comparison (EUROMET. PR-K6) of spectral regular transmittance. (FR AT CZ PL PT SE RO CH HU NL TR FI IT ES GB DE SK). Filters measured by the NMIs already.

569. EUROMET Key comparisons of luminous intensity (EUROMET PR-K3a) and luminous flux (EUROMET PR-K4) (DE FR IT AT CZ FI GB NL PL SE TR CZ) will start during the year 2002. Completion by the end of 2003.

583. Comparison of NIR diffuse reflectance scales (GB PT SE). The measurements have been completed. Writing the report.

587. EUROMET Key comparison spectral responsivity (EUROMET.PR.K2b) (ES AT NL NO PL SE TR CH CZ). Measurements will start during the fall of 2002.

619. Key comparison of spectral diffuse reflectance (EUROMET.PR-K5) (HU DE FR CZ SE PL CH) will start after being completed the CCPR-K5.

EUROMET. PR-K1a will be registered by NPL.

EUROMET.BPR-K2 a 1/a 2 will be registered by NMI-VSL.

#### Agreed projects in co-operation in research

359. Wavelength standards for optical communication (DK GB PT SU UA FI). Active.

562. Two photon metrology (IT FR GB HU DK CH NL ES US). Active.

582. Investigation into the differences between diffuse reflectance measured using conventions sphere based techniques and goniophotometry. (GB, PL FR DE). Near completion. Conclusions will be presented at NEWRAD02.

#### Agreed projects in consultation on facilities

437. Evaluation of the radiometric performance of UV photodetectors (DE DK ES FI FR HU NL SE GB US). Experiments should be finished by May.

581. Fibre optic consultation working group (SE AT CZ DK FI FR DE IT NL NO PL PT SK ES CH TR GB UA). The first task of the WG to analyse EUROMET CMCs in fibre optics.

Agree traceability projects

6 Reflectance of diffusing materials (DE GB FI SE AT CZ). Active.

36 UV radiometric scales and calibration services (DE GB). Continue.

37 Transfer Standards for spectrophotometry and colorimetry (GB IT PT CZ). Change of chair will be agreed between PT and IT.

38 Fibre optic standards (GB CH ES IT PT).

40 Traceability of spectral irradiance scales (GB CH IT).

204 Measurement of diffusion of retroreflector reference standards (IT GB). New chair: M.L. Rastello.

374 Spectral responsivity scales (GB CH).

539 Radiometric calibration of French UV and VUV source standards (DE FR).

603 Spectral irradiance scales using detector based standard lamps (DE AT).

Proposed projects

375 Comparison of characterisation techniques for filter radiometry (GB DE FR HU SK FI CH).

443 Comparison of UV power meters (GB FR DE IT NL SE).

444 Comparison of luminance meters (GB DE ES FI FR HU IT SE PL NL).

*3.2. EU projects*

\* Fibre Optic Thematic Network (FOToN) (GB PT ES DK BF FI FR NL SE GR IE IT DE). The EU funding finished at the end of 2001.

\* Thematic Network for UV Radiation Measurements (FI DK FR DE IT NL NO PT ES SE GE + about 40 additional partners). The EU funded part was completed , but the Network is still active. Next meeting in Greece 7-8 Oct, 2002.

\* Improving the Accuracy of UV Radiation Measurements. (GB DE NL FI FR). Completed at the end of 2001.

#### **4) Mutual Recognition Arrangement**

##### *4.1 Key Comparisons*

CIPM Key Comparisons.

##### **Spectral Irradiance**

CCPR-K1a. (GB). The measurement of the lamps at the NPL are finished and they will be back to the NMIs. Results for the next CCPR meeting (2003).

CCPR-K1b. (DE). The deuterium lamps will be circulated as we agree at NEWRAD02.

##### **Spectral Responsivity**

CCPR-K2a. (US). Analysing data. Preliminary results at NEWRAD02. Draft A by the end of the next summer.

CCPR- K2b. (BIPM). Writing draft A.

CCPR-K2c. (DE). Problems with production of detectors. The detectors will be available by July 2002.

##### **Luminous Intensity and Luminous Flux**

CCPR-K3b. (DE). Finished, but the final report is still not written. New world mean (reference value) has been calculated.

##### **Spectral diffuse reflectance**

CCPR-K5. (ES). It will be finished next year.

##### **Spectral regular transmittance**

CCPR-K6. (FR). Measurements done. Preliminary anonymous results at NEWRAD02.

##### **EUROMET Key Comparisons**

EUROMET. PR-K1a. Spectral irradiance. It will be registered by NPL.

EUROMET. PR-K2a1/a2. They will be registered by Nmi-VSL.

EUROMET. PR-K2b. See Project 587 (Sec. 3.1).

EUROMET. PR-K3a. See Project 569 (Sec.3.1).

EUROMET. PR-K5. See Project 619 (Sec. 3.1).

EUROMET. PR-K6. See Project 538 (Sec. 3.1).

##### *4.2 Supplementary Comparisons*

The ongoing CIPM supplementary comparisons are:

CCPR-S1. Comparison of spectral radiance (RU).

CCPR-S2. Comparison of aperture area measurements (US).

EUROMET Supplementary Comparisons are:

- 156. Comparison of high laser power (see sec. 3.1)
- 443. Comparison of UV power meters (see sec. 3.1)
- 441. Comparison of luminance meters (see sec. 3.1).

#### *4.3 Calibration and measurement capabilities*

\* EUROMET internal reviews.

The first group of EUROMET PHORA CMCs were reviewed following the EUROMET acceptance criteria in P&R approved by the CPs. The CMCs were approved by the JCRB and included in the Appendix C of the KCDB of the BIPM in March 2001.

The second group of CMCs (EUR. PHORA.310501 document) was studied and approved by the CPs in May 2001. The services categories included in this document are the "closely related to Key comparison quantities", and they were approved by the JCRB to be included in the KCDB on October 2001. A total of 138 new entries from 18 countries were included in this second group of EUROMET PHORA CMCs.

The EUROMET PHORA TC is now working on the third group of CMCs proposals, corresponding to the second round of the JCRB timetable. At present time there are proposed new CMCs from 11 NMIs.

\* Review of EUROMET CMCs by other RMOs

During the inter-regional review of the second set of the EUROMET CMCs some comments were received from APMP PR TC . The necessary modifications of the CMC tables were agreed with APMP before October 2001 JCRB meeting.

\* Review of the CMCs of other RMOs by EUROMET.

The EUROMET PHORA inter-regional review team did the analysis of the CMCs submitted by APMP and SIM. In subsequent email discussions with APMP PR TC an agreement was found and the CMCs were sent to the JCRB and published in October 2001. SIM sent a set of CMCs to the JCRB taken into account the comments made by EUROMET PR TC, and were published in the Appendix C of the KCDB of BIPM in November 2001.