Realization of the spectral irradiance Scale in the UV range

Report

Regular Reporting on Subproject Progress
Reporting period: 1st Semester 2017
Report No: 4

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**Abbreviations**

INTI: Instituto Nacional de Tecnología Industrial

LES: Laboratorio de Energía Solar

LATU: Laboratorio Tecnológico del Uruguay

CENAM: Centro Nacional de Metrología

IBMETRO: Instituto Boliviano de Metrología

INMETRO: Instituto Nacional de Metrología, Qualidade e Tecnologia

INACAL: Instituto Nacional de Calidad

PTB: Physikalisch-Technische Bundesanstalt
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1. **INTRODUCTION**

In Latin America the current situation in UV radiation measurements is dissimilar. Only Argentina, Brasil and Mexico have Calibration and Measurement Capabilities (CMCs) in Photometry and Radiometry in the appendix C of the BIPM. Countries such as Peru, Bolivia, Uruguay and Argentina need to develop measurements in photometry and radiometry for the development of new and innovative services in the field of biodiversity and climate protection.

The main objective of this project is acquiring knowledge and expertise, in order to achieve CMC’s in UV radiometry in the region. In Argentina, for example, it will facilitate the possibility to transfer the optical power scale from the cryogenic radiometer to spectral irradiance detectors, obtaining this way the traceability chain to national standards in radiometry.

In this projects are involved the following institutions:

INTI (Argentina)  
LES (Uruguay)  
LATU (Uruguay)  
IBMETRO (Bolivia)  
INMETRO (Brasil)  
CENAM (Mexico)  
INACAL (Peru)  
PTB (Germany)

2. **PERFORMED ACTIVITIES**

1) It was held the workshop on array spectrometers characterization at PTB. Members from INTI, INMETRO and CENAM carried their array spectrometers and characterized them under the supervision of PTB experts.

2) Jointly with the workshop, members from INTI, INMETRO and CENAM participated in the training in standard lamps calibration at PTB. Some members carried standard lamps and PTB donated an additional FEL standard lamp to each. They were calibrated and they will be used as reference standard of spectrum irradiance at each INM.

3) During the mentioned activities the members from INTI, INMETRO and CENAM visited some related laboratories of PTB.

3. **IMPLEMENTATION PROGRESS**

The workshop on array spectrometers characterization and the training in standard lamps calibration were very satisfactory. The participants took part of the different activities performed or directed by PTB experts. The FEL lamps calibrations at PTB will be transferred to secondary standard FEL lamps at each INM. In addition, the certificates of calibration issued by PTB will allow to the participants to declare CMC’s in spectrum irradiance in the future.
The knowledge acquired at the workshop on array spectrometers characterization at PTB will be used to characterize other spectrometers at each INM (always taking into account that the facilities at each institution are not the same that at PTB). All the information gathered turned out to be very fruitful for the visitors. It all increased the possibility of future cooperation between PTB and these INM’s and between the INM’s and others in Latin America.

4. **ADJUSTMENT REQUIRED**

It will be queried between the members about the necessity of modifications in the action plan (contents and dates of future steps).

5. **NEXT STEPS**

**Table 1:**

<table>
<thead>
<tr>
<th>What?</th>
<th>Who?</th>
<th>When?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Query between the members about the necessity of modifications in the action plan (contents and dates of future steps).</td>
<td>All participants.</td>
<td>July, 2017.</td>
</tr>
<tr>
<td>Transfer FEL lamp calibration at PTB to secondary standard FEL lamps at each INM.</td>
<td>Members of INTI, INMETRO and CENAM.</td>
<td>July - December, 2017.</td>
</tr>
<tr>
<td>Use of knowledge acquired at the workshop on array spectrometers characterization at PTB to characterize other spectrometers at each INM.</td>
<td>Members of INTI, INMETRO and CENAM.</td>
<td>July - December, 2017.</td>
</tr>
<tr>
<td>FEL standard lamps and solar spectrometers intercomparison at INTI.</td>
<td>Members of INTI, INMETRO and CENAM (and LATU?). PTB experts.</td>
<td>2018.</td>
</tr>
<tr>
<td>Training for INACAL, LATU, IBMETRO and Bolivian university members by INTI experts, at INTI.</td>
<td>Members of INTI, INACAL, LATU and IBMETRO. Two Bolivian university members</td>
<td>2018.</td>
</tr>
</tbody>
</table>

**ANNEX**

The action plan of the subproject is attached.