

**Comité Consultatif de Photométrie et Radiométrie (CCPR)**  
**Working Group on Strategic Planning (WG-SP) 13<sup>th</sup> Meeting**

At BIPM, Sèvres, France

Tuesday, 17 September 2019, 13:30 – 18:00

Draft Minutes v.1.5

**Attended by the following members (M) and observers (O):**

Maria Nadal, NIST (M), WG-SP Chair

Joële Viallon, BIPM, CCPR Executive Secretary

Maria Luisa Rastello, CIPM/INRIM, CCPR President

Mohammad Z. AlFohaid, SASO-NMCC (O), GULFMET TC-PR Chair

Khalid Almakhliifi, SASO-NMCC (O)

Özcan Bazkir, UME (O)

Anatolii Bescupschii, NMI MD (O), COOMET TC-PR Chair

Peter Blattner, METAS (M)

Giorgio Brida, INRIM (O)

Joaquin Campos Acosta, CSIC (M)

Hector A. Castillo, CENAM (M)

Catherine Cooksey, NIST (M)

Jimmy Dubard, LNE (M)

Nigel Fox, NPL (M)

Angela Gamouras, NRC (M)

Haiyong Gan, NIM (M), APMP TC-PR Chair

Teresa Goodman, NPL (M)

Julian Gröbner, PMOD/WRC (O)

Erkki Ikonen, MIKES (M)

Annette Koo, MSL (M)

Stefan Kück, PTB (M), EURAMET TC-PR Chair

Dong-Hoon Lee, KRISS (M), WG-KC Chair

John Lehman, NIST (M)

Seon-Do Lim, KRISS (M)

Yandong Lin, NIM (M)

Peter Manson, NMIA (M)

Alice Meda, INRIM (O)

Thiago Menegotto, INMETRO (O), SIM TC-PR Chair

Gael Obein, LNE (M)

Yoshihoro Ohno, NIST (M)

Ferhat Sametoglu, UME (O)

Luke Sandilands, NRC (M)

Hiroshi Shitomi, NMIJ/AIST (M)

Reinhardt Sieberhagen, NMISA (O), AFRIMETS TC-PR Chair

Marek Smíd, CMI (O), CCPR-WG-CMC chair

Armin Sperling, PTB (M)

Cho Man Tsui, SCL (O)

Steven van den Berg, VSL (O)

Emma Woolliams, NPL (M)

Kuei-Neng (Gilbert) Wu, CMS-ITRI (O)

Joanne Zwinkels, NRC (M) via Telecon

**Regrets:**

Gerald T. Fraser, NIST (M)

Andreas Steiger, PTB (M)

### 1. Opening of the meeting and introduction of members and observers

Maria Nadal welcomed everyone to the meeting. All participants introduced themselves.

### 2. Appointment of the rapporteur and approval of agenda [CCPR-WG-SP/19-02](#)

Stefan Kück was appointed as rapporteur. The agenda v 1.2 was presented and approved, unanimously.

### 3. Approval of the minutes of the 12<sup>th</sup> meeting [CCPR-WG-SP/19-01](#)

Minutes were approved.

### 4. Review of action items and decision points from the minutes of the 12th meeting [CCPR-WG-SP/19-10](#)

WG-SP Chair reviewed the action items and decisions points from 12<sup>th</sup> meeting.

Action points:

- AP-2018-01: John Lehman to ask Andreas Steiger to carry out the survey for TG8.  
**Completed:** results from survey will be presented during the TG8 report.
- AP-2018-02: John Lehman to provide Joanne Zwinkels with the name of the CENAM collaborator (in fibre optic responsivity pilot study) after the meeting.  
**Completed:** The name of the collaborator from CENAM is Zeus Efrain Gutierrez.
- AP-2018-03: All presenters at WG-SP 2018 meeting to submit presentations to Stefan for upload to the CCPR WG-SP website.  
**Completed:** All documents were uploaded.
- AP-2018-04: Joanne Zwinkels to check statement on percentage of energy/electricity used world-wide for lighting in the CCPR Strategy document and revise, if needed.  
**Completed:** Statement entered in the strategic document of WG SP, see also TG10 Report [CCPR-WG-SP/19-06](#)
- AP-2018-05: All to provide minor editorial comments on CCPR strategy document to JZ within two weeks (17/07/2018)  
**Completed:** CCPR strategy documents was approved on 20/02/2018 (see CCPR- WG-SP/19-01)
- AP-2018-06: John Lehman to send technical protocol (for optical fibre power responsivity) to Joanne Zwinkels (for distribution to WG-SP). The expression of interest to participate in this pilot comparison/study should be stated before the end of 2018. The wording should be switched from “pilot comparison” to “pilot study”.  
**Completed:** John Lehman will give an overview on TG 13, [CCPR-WG-SP/19-05](#).
- AP-2018-07: Maria Luisa Rastello and Yoshi Ohno to coordinate their presentations for the 2018 CGPM meeting.  
**Completed:** See meeting document [CCPR-WG-SP/19-04](#).  
**AP-2019-01: WGC to upload presentation from Yoshi Ohno to the meeting documents.**
- AP-2018-08: Maria Nadal to ask Andreas Steiger if he is willing to take over the chair position for TG8.  
**Completed:** Andreas Steiger accepted.
- AP-2018-09: Joële Viallon to send template to WG-SP for poster as soon as available.  
**Completed:** Poster prepared and presented, see meeting document: [CCPR-WG-SP-19-03](#).

Decision points:

- DP-2018-01: A task group (TG14) on “Discussion Forum on Improved 1 W Laser Power Responsivity” is formed with the following members: John Lehman (Chair), Peter Blattner, Dong-Hoon Lee, Stefan Kück, Steven van den Berg, Joaquin Campos, Jimmy Dubard.

**Completed:** John Lehman to give progress report during the meeting.

- DP-2018-02: A new ad-hoc group for the poster preparation is formed, with the following members: Maria Nadal (Chair), Nigel Fox, Stefan Kück, Gaël Obein, Yoshi Ohno, Joanne Zwinkels, Joële Viallon.

**Completed:** Poster was prepared, see meeting document: [CCPR-WG-SP-19-03](#).

## 5. Documents Presented to the Meeting

CCPR-WG-SP-19-01\_Minutes\_V1.5.pdf

CCPR-WG-SP-19-02\_2019\_CCPR\_SP\_Agenda\_v1.2.pdf

CCPR-WG-SP-19-03\_CCPR\_poster\_10192018.pdf

CCPR-WG-SP-19-04\_CCPR-presentation-CGPM26.pdf

CCPR-WG-SP-19-05\_TG13\_Draft\_Protocol.pdf

CCPR-WG-SP-19-06\_TG10\_Report.pdf

CCPR-WG-SP-19-07\_TG7\_report.pdf

CCPR-WG-SP19-08-Summary\_of\_activities\_of\_TG9\_OTDR\_2019.pdf

CCPR-WG-SP19-09-JTC-2\_progress\_report\_Y. Ohno\_(2019-6-6).pdf

CCPR-WG-SP19-10\_2018\_Action\_Items\_and\_Decision\_Points\_CCPR-WG-SP\_2019\_Nadal.pdf

CCPR-WG-SP19-11\_2019\_CCPR\_WG-SP\_Report\_Nadal\_v1.pdf

CCPR-WG-SP19-12\_2019\_CCPR\_WG-SP\_Progress\_report\_TG4.pdf

CCPR-WG-SP19-13\_Progress\_Report\_TG\_11\_Few\_Photon\_Radiometry\_2019.pdf

CCPR-WG-SP19-14\_2019\_CCPR-WG-SP\_TG8.pdf

CCPR-WG-SP19-15\_CCPR\_Report\_to\_21st\_meeting\_of\_CCU\_version\_23\_May\_2013.pdf

CCPR-WG-SP19-16\_CCPR\_WG-SP\_TG4\_Workshop\_2013\_Possible\_reformulation.pdf

CCPR-WG-SP19-17\_CCPR\_Report\_to\_CCU\_meeting\_11\_June\_2013.pdf

CCPR-WG-SP19-18\_Presentation-CGPM26-Ohno.pdf

CCPR-WG-SP19-19\_TG6\_TG9\_Report2019.pdf

## 6. Reports of WG and TG Chairs and Matters Arising:

### WG: Strategic Planning (Maria Nadal)

See presentation by Maria Nadal, which gave an overview of the work of this working group. [CCPR-WG-SP19-11](#)

The presentation includes the members list, observers list, and list of the active TGs, including the CIE JTC-2. Reported in the changes in chair positions for TG 8 (Andreas Steiger), TG 10 (Maria Nadal), TG13 (John Lehman), and TG14 (John Lehman). The chair reminded the TG chairs that they are responsible for the information flow to the TG members. To date, TG1, TG2, TG3 and TG5 have been dissolved. Finally, the chair presented the CCPR-poster presented at the CGPM2018.

Priority Goals for 2019 – 2020:

- Update and finalize the CCPR strategy document before 2020 meeting
- Response to the question on “What’s new in photometry and radiometry in the next decade?”

- Advance the Aims of the Discussion Type Forums:
  - Prioritize activities of TG12 on White LED sources
  - Organize pilot studies, workshops and/or surveys as needed
- To carry out open discussions on new CCPR WG-SP priorities.

#### **TG4: SI (Stefan Kück)**

Stefan Kück presented the progress within TG4 on SI, see [CCPR-WG-SP19-12](#). He mentioned that TG4 was formed in 2009 and the only objective was to monitor and respond to developments with respect to the future SI. He reviewed the TG4 past accomplishments on the revised definition of the Candela. He asked members for input on the future of TG4. After a long discussion (some of the comments are summarized on [CCPR-WG-SP/19-12](#)), the WG-SP members decided to dissolve TG4 since the objectives of the TG have been completed.

**DP-2019-01: WG-SP decided to dissolve TG 4.**

#### **TG6: Discussion Forum on Fibre Optics (Jimmy Dubard)**

This TG report will be presented together with TG9 report.

#### **TG7: Discussion Forum (DF) on Few Photon Metrology (Dong-Hoon Lee)**

Dong-Hoon Lee presented the progress within TG7, see [CCPR-WG-SP/19-07](#). The presentation included the terms of reference and the list of members. The last TG7 meeting was in conjunction with the 2017 Single-Photon Workshop in Boulder. The list of outstanding issues is included in the [CCPR-WG-SP/19-07](#).

Dong-Hoon reported the need of a guidance document on few photon metrology with possible publication venues including CIE, ISO/IEC, or CCPR/BIPM webpage. All options have pros and cons, so a conclusion was not achieved. Nigel Fox suggested publishing such a document at the NMIs or RMO level. Dong-Hoon Lee replied that it will also be difficult to find the authors for this document and that Discussion Forum have, in contrast to other TGs, more difficulties to meet because they have a wider field of participants. Joanne Zwinkels suggested publishing a guidance document in a referenced journal. Stefan Kück suggested to conduct a review on already existing technical documents. Furthermore, Stefan Kück stated that the TG7 terms of reference are rather ambitious. Dong-Hoon Lee asked: what actions are expected from a discussion forum? Nigel Fox points out that these terms of reference were the original idea of this discussion forum. If there is no vision on how the interaction between the DF and the community might be carried out, what is the meaning of the DF? Is the community engaged? Dong-Hoon Lee replied that the demands from the community to the NMIs are rather small and limited.

Next face-to-face meeting is planned in collocation with the Single-Photon Workshop (SPW) in Milano, October 21-25, 2019. The SPW is every two years and is a good platform for spread the work of NMIs into this community. Dong-Hoon Lee stated that at the workshop updates of the technical issues and possible TG7 actions will be discussed. Peter Manson asked about the origin of the list of issues, Dong-Hoon Lee explained that it was collected from an initial conversation with the community. John Lehman stated that NIST is interested in the metrology and standardization documents. Furthermore, in John Lehman's opinion the community is ready to take up activity in commercialization, so probably documents and work is needed. He encouraged to progress with the work in the TG. Nigel Fox agreed that SPW is presumable a good forum for this topic. Joanne

Zwinkels stated that outcomes from DF are e.g. also other TGs, e.g. TG 11 from TG7, TG9 from TG6, so DF are productive and effective.

**AP-2019-02: Dong-Hoon Lee to report on the Single-Photon Workshop and on the TG7 meeting, both taking place in Milano, at the next WG-SP meeting.**

#### **TG8: Discussion Forum on THz Metrology (Andreas Steiger)**

Andreas Steiger was not able to attend this meeting. John Lehman gave the report, see [CCPR-WG-SP/19-14](#). He presented the results of the TG8 survey. Responses from NIST, NIM, PTB, MSL were presented.

The original question was whether there is further interest in THz laser power? Joanne Zwinkels asked whether the survey shows some prioritization? Has the TG completed its task? Is there an interest in a second pilot study on laser power or on other measurands in the THz spectral region? John Lehman stated that the main measurand is THz laser power and the parameters to be measured are power level, frequency, detectors or sources. Other measurands are e.g. transmittance and reflectance. Nigel Fox commented that only NMIs responded, but the forum is about interfacing with industry. John Lehman responded that e.g. at PTB there is more work carried out with industry, Nigel replied that this “more” is the important question for CCPR. Stefan Kück asked whether the responses from the survey are purely from NMIs or also contain responses from industry via the NMIs? John Lehman replied that he assumes this. Yoshi Ohno asked about the need for another comparison, John Lehman replied that THz-power measurements are the anchor to the THz-field. Maria Luisa Rastello asked whether there is an interest from CCEM and if THz in their strategy. John Lehman stated that the pilot comparison went very well. Yoshi Ohno asked if there is a need for more frequent comparisons and John Lehman replied that this is not clear yet. Joanne Zwinkels suggested that Andreas Steiger should provide additional comments on the survey.

**AP-2019-03: WGC to contact Andreas for additional comments on the outcome of the survey.**

#### **TG9: OTDR length comparison (Jacques Morel)**

Jacques Morel was not able to attend the meeting. TG6 and TG9 progress reports were given by Jimmy Dubard, see [CCPR-WG-SP/19-08](#).

For TG6 related activities, the CPEM 2018 was held in Paris on 8-12 July 2018 with 1 oral session on this topic with 5 presentations (chaired by David Humphreys, NPL) and 2 poster sessions with 11 posters (chaired by John Lehman, NIST, and Jimmy Dubard, LNE).

Within TG9, there was a discussion on CMC entries with respect to an analysis and to an optimization of the service categories for OTDRs, related to IEC 61746-1 and IEC 61746-2, i.e. length scale calibration. Two new service category entries, 7.10.1 and 7.10.2, were agreed by CCPR WG-CMC.

Activities in the field of OTDRs are currently mainly intercomparisons to support the CMC entries:

- On Optical fiber length: 8 participants, APMP.PR-S8 (service category 7.10.0)
- On OTDR single mode: 13 participants will start after APMP.PR-S8 (Service category 7.10.1 and 7.10.2)
- On OTDR multimode: attenuation scale, artefact developed within EMPIR 14IND13 project.

Nigel Fox asked about that in case of supporting CMCs, there should be comparisons and the organization should be in WG-KC, not in WG-SP. Dong-Hoon Lee clarified that these comparisons will be registered under WG-KC. Joanne Zwinkels clarified that pilot studies are within WG-SP, pilot comparisons are within WG-KC. Marek Smid added that pilot studies may be considered as

supporting evidence. Yoshi Ohno added that pilot studies are meant to be a preparation for comparisons. Marek asked about the liaison with WG-CMC TG4, Peter Blattner replied that Jacques Morel is chairing both TGs, i.e. WG-SP TG9 and WG-CMC TG4.

**AP-2019-04: Jimmy to clarify whether single mode comparison will be a SC or a pilot study.**

#### **TG10: Ad hoc on CCPR Strategy document (Joanne Zwinkels)**

Joanne Zwinkels gave the progress report for TG10, see [CCPR-WG-SP/19-06](#). In 2018, Joanne Zwinkels circulated an update of the strategy document, which was confirmed by WG-SP in July 2018 during the last WG-SP meeting.

There were two AP from that WG meeting:

AP-2018-04: Joanne Zwinkels to check statement on percentage of energy/electricity used world-wide for lighting in the CCPR Strategy document and revise, if needed. This relates to clause 3.6, where it was stated that “lighting accounting for 20% of the world-wide energy use”. Joanne Zwinkels received from Emma Woolliams the following replacement text: “This transformation is bringing enormous energy savings, as the percentage of world-wide use of electricity has dropped from a peak of about 20% as tungsten-based lighting is phased out in all countries”. Furthermore, comments from Steven van den Berg on the strategy document were implemented. The final version of the CCPR strategy document (2017 – 2027) is now available at the CCPR website. Joanne Zwinkels was the TG10 chair until 2019, now the new chair is Maria Nadal. Joanne Zwinkels will remain a member. Further Updates of CCPR Strategy is necessary to comply with new versions of CC strategy documents according to the format proposed by the CIPM. WGC stated that the revision of the document will start in 2020.

**AP-2019-05: WGC to work on updating CCPR strategy document.**

#### **TG11: Single Photon Radiometry (Stefan Kück)**

Stefan Kück presented the TG11 progress report, see [CCPR-WG-SP/19-13](#). He gave an update on the 3 terms of reference for the TG. The TG made progress toward the pilot study on the detection efficiency of single-photon detectors, completed a questionnaire to discuss possible participants. Currently, measurements are on-going. Members for this TG include NMIs that are CCPR members, representative from NMIs that are not CCPR members, and experts from academia and industry. The TG chairman will be elected at the next TG meeting in Milano, Italy. The current pilot study is at 850 nm with Si-SPAD and is a combination of a star and round-robin comparison to care for detector stability. The current status of the pilot study including participants and measurement schedule is listed in [CCPR-WG-SP/19-13](#). The next step is a similar pilot study at the wavelength of 1550 nm.

#### **TG12: Discussion Forum on the Use of White LED Sources for Photometry (Tatsuya Zama/ Hiroshi Shitomi)**

Hiroshi Shitomi gives an oral report, not written report was submitted. Tatsuya Zama has changed position within AIST, so he will not be longer available to chair TG12. Hiroshi Shitomi is the temporary chair of this TG. One of the last activities of Tatsuya Zama was the circulation of a questionnaire to the NMIs, however, the results are not available yet. There were four questions in the questionnaire:

1. Research activity in each member NMIs
2. LED specification required

3. Current status of collaboration with industry and manufacturers
4. Current status of collaboration with universities and other communities.

WGC mentioned that TG12 needs a new chair. Dong-Hoon Lee suggests Hiroshi Shitomi, who agreed to this position. WGC asked the task group members as well as the WG-SP members and all agreed.

**AP-2019-6 Hiroshi Shitomi to submit an overview of the outcome of the survey to WGC and distribute this overview to TG members, 12/2019.**

### **TG13: Optical fibre power responsivity (John Lehman)**

John Lehman gave a report on optical fibre power meters, see [CCPR-WG-SP/19-05](#). There have been comparisons on optical fiber power responsivity outside CCPR and all the comparisons have been bilateral. Typically, the traceability chain starts from the cryogenic radiometer via free space transfer standards to the optical fibre power meters. John Lehman reported that there are single-photon detectors having about the same uncertainty, which he considered this to be very ambitious. To shorten the traceability chain, NIST has developed an all fibre cryogenic radiometer. Another challenge is that the fibre-coupling has a significant impact on the overall uncertainty.

John Lehman presented the current status of the optical fiber power responsivity comparison. Participants are NIST, CENAM, CMI and possibly METAS. The Technical Protocol has been finalized and agreed among the participants, but the measurement have not started. However, NIST is ready to disseminate the transfer standards, which are commercial fibre-coupled detectors. Stefan Kück suggested registering the pilot study as a EURAMET project, so that it is completely documented. Stefan Kück asked about the connection to single-photon detectors. John Lehman replied that small uncertainties are claimed in the literature even for fibre-coupled single-photon detectors, which seems to be too low. This pilot study will help in Lehman's opinion to clarify the influence of fiber connectors on the total uncertainty.

**AP-2019-07: John Lehman to submit presentation to WGC for posting on meeting documents.**

### **JTC-2 (CIE-CCPR): Principles Governing Photometry (Yoshi Ohno)**

Yoshi reported the progress on JTC-2, see [CCPR-WG-SP/19-09](#). The document "Principles Governing Photometry" is important since this document is the bridge between CCPR and CIE. The work of this committee has been completed and published as CIE018:2019 Principles Governing Photometry (3<sup>rd</sup> edition) and as the BIPM report 2019/05 Principles Governing Photometry, 2<sup>nd</sup> edition. Both documents were published on May 20<sup>th</sup>, 2019, the World metrology day. Yoshi Ohno suggested to close JTC-2.

**DP-2019-02: WG-SP decided to dissolve JTC-2.**

### **TG 14: Discussion Forum on Improved 1 W Laser Power Responsivity (John Lehman)**

John Lehman gave progress report, see [CCPR-WG-SP/19-14](#). He presented the results of EUROMET.PR-S2 comparison, completed 2009. The gravitational wave community is aware of these results, because laser power measurements are directly related to the outcome of gravitational waves distance measurements. A summary of the GW a. o. on laser power measurements workshop in Boulder is:

- Power wrong -> GW distance wrong
- Disagreement - > GW location wrong
- Agreement, but wrong - > Hubble constant wrong

The GW community is not sure if another comparison would help their community. Erkki Ikonen stated that the metrology community is responsible for finding a solution or at the minimum a useful comparison. John Lehman described that the GW community uses modulated power, 100 Hz, peak power 1 W. John Lehman will invite GW community to NEWRAD 2020.

Nigel Fox suggested changing the name of the TG to emphasize more the gravitational wave topic. A discussion on the TG name followed. The TG members agreed, as well as the WG-SP agreed on a new name: Discussion Forum on Radiometry to support Gravitational Wave Detection.

AP-2019-08: WGC to list TG 14 on the CCPR WG-SP website.

AP-2019-09: John to draft the terms of reference for the task group CCPR WG-SP TG14. 12/2019.

DP-2019-03: The CCPR WG-SP decided to change the name of CCPR WG-SP TG14 to "CCPR WG-SP TG14 Discussion Forum on Radiometry to support Gravitational Wave Detection"

## 7. Report from BIPM/ CIPM (Maria Luisa Rastello)

Maria Luisa Rastello gave an update on BIPM/CIPM activities relevant to the CCPR. She has been requested to give a talk on "What is next for the Candela?" at the upcoming 20<sup>th</sup> NMI Director's meeting on October 17-18, 2019. NMI directors would like to have an update on the CCs that had little work on the SI redefinition, these are CCTF, CCL, and CCPR. Maria Luisa Rastello asked for the support of the WG-SP in the preparation of this talk.

There was a follow-up discussion by all members. Yoshi Ohno stated that the new SI is fine, however, the luminous efficiency function is still not in the definition. In addition, Maria Luisa Rastello stated that there is even at the CIPM level often questioned the existence of Candela as a base unit. Yoshi Ohno suggested mentioning the recent work on the JTC-2. Nigel Fox stated that a discussion on the Candela might result in losing the Candela as a base unit. Peter Blattner also stated that a discussion on the Candela would not be helpful and Yoshi Ohno agreed. Marek Smíd suggested looking to the purpose of the talk. Nigel Fox stated that in his opinion the NMIs director want to hear about the photometric and radiometric activities of the CCPR and their applications. John Lehman stated that new activities, like e.g. photon momentum should be included in the talk. Erkki Ikonen referred to the 1979-definition of the candela and the applications evolving from that. Stefan Kück suggested that the 2018 CCPR might be a good reference / starting point. Gaël Obein mentioned that for the 2014 NMI Director's meeting the audience consists not only of NMI-directors, but also of people from ministries. Furthermore, Gabel Obein said that in his opinion,  $K_{cd}$  has the same importance than the other constants. The candela is in his opinion the only quantity that relates to humans. WGC suggested to form an Ad-hoc group to support the CCPR president preparing a talk entitled: What is next for the Candela?

DP-2019-04: Ad-hoc group formed on Support for NMI director's meeting: Maria Luisa Rastello (chair), Nigel Fox, John Lehman, Stefan Kück, Marek Smíd, Peter Blattner, Erkki Ikonen, Gael Obein, Joanne Zwinkels, Yoshi Ohno, and Maria Nadal.

## 8. Report from CIE (Dong-Hoon Lee)

Dong-Hoon Lee, CIE D2 secretary, presented the CIE report.



- Revised SI:
  - Principles Governing Photometry published
  - New appendix 3 of the SI brochure
  - CIE illuminant A has different CCT: 2855,496 K - > 2855,5 K
- 14 new publications since last meeting
- New activities
  - TC 2-90 LED reference spectrum for photometer calibration
  - TC 2-92 International standard format for electronic transfer of luminaire optical data
  - New TC to revise S 010: Photometry: the CIE system of physical photometry
  - New TC proposed on measurement of haze.
  - Issues on horticulture lighting
  - Issues on obtrusive light (light pollution)
  - Issues on temporal light modulation

### **9. Review of membership: Chair & members of Working Group & Task Groups**

WGC gave overview on CCPR WG-SP membership criteria. No proposals for changes in the membership were received and the membership remains unchanged.

### **10. New WG-SP Business**

No new business was brought forward.

### **11. Recommendations to CCPR**

DP-2019-01: WG-SP decided to dissolve TG 4.

DP-2019-02: WG-SP decided to dissolve JTC-2.

DP-2019-03: WG-SP decided to change the name of CCPR WG-SP TG14 to “CCPR WG-SP TG14 Discussion Forum on Radiometry to support Gravitational Wave Detection”

DP-2019-04: WG-SP formed a new Ad-hoc group to support Maria Luisa in making a presentation on “what is new with the Candela?” for an NMI director’s meeting. The Ad-hoc group members are Maria Luisa (chair), Nigel Fox, John Lehman, Stefan Kück, Marek Smid, Peter Blattner, Erkki Ikonen, Gael Obein, Joanne Zwinkels, Yoshi Ohno, and Maria Nadal.

### **12. Next meeting date**

Participants discussed the possibilities of having the WG meetings in conjunction with a technical conference. Then, the WG chairs proposed to have the meeting in conjunction with NEWRAD 2020 in Boulder, Colorado, June 23<sup>rd</sup> – 26<sup>th</sup>. The participants suggested to have the WG-meetings on Sunday, 21<sup>st</sup> and Monday, 22<sup>nd</sup>, June 2020 in Boulder, Colorado.

AP-2019-10: WG Chair to contact the NIST conference services concerning the possibilities to have WG-meetings on Sunday, 21<sup>st</sup> and Monday, 22<sup>nd</sup>, June 2020 at hotel and/or at the University of Colorado, Boulder.

### **13. Adjournments**

The meeting ended at 18:10.

**List of action points:**

- AP-2019-01: WGC to upload presentation from Yoshi Ohno to the meeting documents.
- AP-2019-02: Dong-Hoon Lee to report on the Single-Photon Workshop and on the TG7 meeting, both taking place in Milano, at the next WG-SP meeting.
- AP-2019-03: WGC to contact Andreas to comment on the outcome of the survey.
- AP-2019-04: Jimmy to clarify whether single mode comparison will be a SC or a pilot study.
- AP-2019-05: WGC to work on updating CCPR strategy document.
- AP-2019-06: Hiroshi to submit an overview about the outcome of the survey and distribute it to the TG members, 12/2019.
- AP-2019-07: John to submit presentation to WGC.
- AP-2019-08: WGC to list TG 14 on the CCPR WG-SP website.
- AP-2019-09: John to draft the terms of reference for the task group CCPR WG-SP TG14. 12/2019.
- AP-2019-10: WGC to contact the NIST conference services concerning the possibilities to have WG-meetings on Sunday, 21<sup>st</sup> and Monday, 22<sup>nd</sup>, 2019 at the University of Colorado.

**List of decision points:**

- DP-2019-01: WG-SP decides TG 4 to be dissolved.
- DP-2019-02: WG-SP decides JTC-2 to be dissolved.
- DP-2019-03: The CCPR WG-SP decided to change the name of CCPR WG-SP TG14 to “CCPR WG-SP TG14 Discussion Forum on Radiometry to support Gravitational Wave Detection”
- DP-2019-04: Ad-hoc group formed on Support for NMI director’s meeting: Maria Luisa (chair), Nigel Fox, John Lehman, Stefan Kück, Marek Smid, Peter Blattner, Erkki Ikonen, Gael Obein, Joanne Zwinkels, Yoshi Ohno, Maria Nadal