**Workshop programme (preliminary version)**

**7th Energy Rating and Module Performance Modeling Workshop**

**DAY1**

**Welcome & introduction (9:10-9:30)**

* Welcome *Davide Rivola – SUPSI*
* Introduction to this workshop *Joshua Stein – Sandia*
* Introduction to IEA PVPS Task 13 activities *Ulrike Jahn – TÜV Rheinland*

**Session 1: Energy rating (9:30-11:00)**

* Presentation of the Photoclass project and its follow-up *Stefan Winter – PTB*
* Overview on Energy Rating standard (IEC 61853 part 1-4) *Ralph Gottschalg - CREST*
* Presentation of draft IEC 61853 part3 *speaker to be confirmed* – *JRC*
* New approach for energy yield assessment with linear performance loss analysis (LPLA) *Markus Schweiger – TUV Rheinland*
* EN 50380 ed. 2.0: What is new? What’s coming next? - *Bengt Jaeckel – UL*

Coffee break

**Session 2:** **PV module modeling (11:30-13:00)**

* Overview of photovoltaic module performance modeling approaches *Joshua Stein – Sandia*
* PV module modelling in PVsyst, in view of IEC 61853 *Bruno Wittmer – PVSYST*
* More accurate module performance predictions using a new model based on IEC-61853 data *Janine Freeman – NREL*
* 'Modeling of PV module temperature using steady state models: analysis for different climates *Elena Barykina – Uni Oldenburg*
* Choosing the best empirical model for predicting energy yield *Steve Ransome – SRCL*

Lunchbreak

**Session 3:** **Meteorological input parameters** **for kWh predictions and energy rating (14:00-14:45)**

* Reference data sets for IEC61853 part4 *Thomas Huld – JRC*
* Measuring the spectral and angular distribution of the diffuse solar radiance *Stefan Riechelmann – PTB*
* *to be confirmed*

**POSTER presentations (14:45-15:15)**

Coffee break

**Session 4:** **Validation and sensitivity studies (15:45-16:45)**

* Propagation of measurement uncertainties into kWh prediction *Christian Reise – ISE*
* Sensitivity analysis for energy rating: Linearity, T-coefficient and AOI dependence of a reference solar cell *Thomas Fey – PTB*
* Energy rating and module performance ratio uncertainty *Martin Bliss- CREST*
* *to be confirmed*

**Presentation of Energy Rating survey results (16:45-17:00)**

**Conference Dinner**

**DAY2**

**Session 5: Cell and module calibration methods and uncertainties (9:00-10:30)**

* The laser-based differential spectral responsivity facility at PTB: Calibration services for energy rating *Ingo Kröger – PTB*
* Uncertainty in DSR measurements according to approximations defined in the IEC 60904-8 *Karsten Bothe – ISFH*
* Accurate indoor data for energy rating  *Jochen Hohl Ebinger - ISE*
* Measurement techniques for energy rating of PV modules at TÜV Rheinland PV Test Laboratory *Werner Herrmann - TUV Rheinland*
* Performance of PV modules under different irradiances and temperatures *Robert Kenny - JRC*

Coffee break

**Session 6:** **Energy prediction of new technologies or features (11:00-12:30)**

* BIPV needs: SUPSI experiences beyond standard test conditions *Pierluigi Bonomo – SUPSI*
* Thermal modeling of BIPV systems *Johannes Eisenlohr- ISE*
* Modeling of mismatch losses due to partial shading in PV plants with custom modules *Gianluca Corbellini – SUPSI*
* Energy yield measurements of MLPE components and comparison with simulation results *Dirk Stellbogen - ZSW*
* Characterizing and modeling the performance of bifacial photovoltaic modules and systems *Joshua Stein - SANDIA*

**Closing**