What we are set out to do

Standardization of SiPM characterization

- Standardize mechanical & electrical interface
- Unify definition of parameters
- Streamline measurement procedures

With the purpose of

- Streamlining information on data sheets
- Simplifying simulation of SiPMs in applications
- Advancing SiPM technology

Topical Groups

- Photon Detection Efficiency
- Large Scale Characterization
- Nuisance Parameters
- (Non-)Linearity
- Cryogenic
- Radiation Damage
- Timing
- Electrical Properties
- SiPM modeling for simulations in applications?

Join a group!

Write a
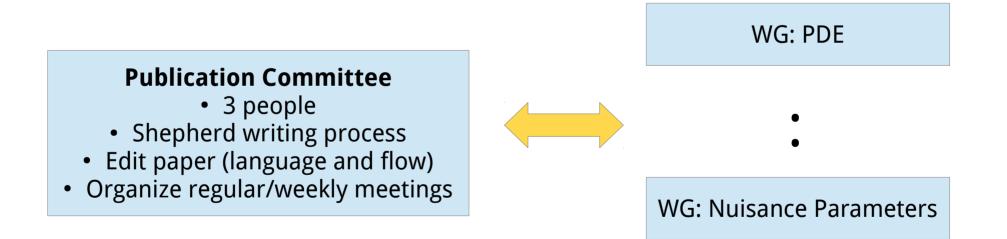# solid-state photomultiplier handbook

Solid-State Handbook: Big Picture

- Peer reviewed
- Open access & arXiv
- Can be updated
- Everyone can contribute
- Publish by the end of the year
  - → Deadline to finish manuscript September 15

Publish in European Physics Journal: Special Topics

- Conference participants and authors get a free copy

Publication Plans: Technicalities

- Use overleaf.com to write the paper (LaTeX)

Publication Committee
- 3 people
- Shepherd writing process
- Edit paper (language and flow)
- Organize regular/weekly meetings

WG: PDE

⋮

WG: Nuisance Parameters

Paper Outline

Introduction
- Aims + Procedures

Overview
- History
- Basic SiPM physics
- Producers
- Applications

Signal Processing
- Design of front end electronics
- ASICS
- Discrete electronics
- Specific recommendations for SiPM characterization

Parameters: Definition
- PDE
- Breakdown voltage
- Dark counts
- Afterpulsing
- Timing
- ...

Includes information how each parameter is measured

SiPM Parameters: Measurements
- PDE pulsed
- PDE continuous?
- Signal trace analysis
- Timing
- Non-linearity
- ....

Large Scale Characterization

Radiation Damage

Cryogenic (Can we merge that into the other sections?)

Modeling of SiPMs in Applications

Share/Open Facilities

Guidelines on how to use SiPMs in Applications
- What to watch out for

Recommendations on Characterization

Conclusions and Next Steps
- Future improvements wanted by community