

DRD4 – WP I: Radiation hard solid state photodetectors with precise timing

- Work programme: studies and development of novel solid state photodetectors
- Related Experiments: ARC, LHCb, ALICE, DUNE, EIC, Belle II
- This work package is addressing the following themes:
 - DRDT 4.1 : Enhance the timing resolution and spectral range of photon detectors\
 - DRDT 4.2 : Develop photosensors for extreme environments
- **Conveners:**
 - Convener 1: Rok Pestotnik,
 - Convener 2: Peter Križan

WPI Tasks:

- **Task WP4.1.1: New configurations and new modes SSPD**
 - study new technologies, ultra-high granularity, and integration of SiPMs with readout electronics.
- **Task WP4.1.2: Fast Radiation hard SiPMs**
 - radiation hardness in different harsh conditions
- **Task WP4.1.3: Cryogenics SSPD / SiPMs** for the cryogenic operation of noble liquids
- **Task WP4.1.4: Timing Performance** - *Study of SSPD timing performances using appropriate readout electronics*
- **Task WP4.1.5: Blue sky research: novel sensor materials**

Resources

No of groups	Sum FTE	Faculty	Students	Postdoc	Engineer	Financial (kEUR)	Available
WP 4.1.1 New configurations and new 5 modes SSPD	13.55	3.95	3.3	2.35	3.95	210	3%
WP 4.1.2 Fast radiation 15 hard SiPMs	25.35	5.4	9.35	3.75	6.85	355	68%
WP 4.1.3 Cryogenics SSPD / SiPMs for the cryogenic 3 operation of noble liquids	5.2	1	1	1.2	2	60	42%
WP 4.1.4 Timing of SSPD- including the appropriate 9 readout electronics	6.8	2.8	2.7	0.2	1.1	35	50%
WP 4.1.5 Blue sky research: 2 novel sensor materials	4.25	1	2	0.25	1	0.001	0%
1 WP 4.1.x propose a new WP	3	3	0	0	0	0	0%

WP 4.1.1 New configurations and new modes SSPD

No.	Institution
1	University of Genova and INFN Genova
2	INFN Pavia, Trento, Milano, Padova
3	CERN-EP
4	INFN - Sezione di Bologna
5	INFN Bari

WP 4.1.2 Fast radiation hard SiPMs

No.	Institution
1	IFIN-HH Bucharest
2	SNU-HFR (Seoul National University & HFR co.)
3	INFN Ferrara
4	University of Genova and INFN Genova
5	FBK
6	INFN Ferrara
7	INFN Padova B2
8	INFN Padova
9	INFN Perugia
10	Jožef Stefan Institute
11	Iowa
12	Nagoya university
13	University Giessen
14	INFN Bologna
15	CERN SY-BI

WP 4.1.3 Cryogenics SSPD / SiPMs for the cryogenic operation of noble liquids

No.	Institution
1	RAL
2	INFN Ferrara
3	FBK

WP 4.1.4 Timing of SSPD– including the appropriate readout electronics

No.	Institution
1	Barcelona
2	Ljubljana
3	University of Genova and INFN Genova
4	INFN Ferrara
5	Monash University
6	INFN Padova
7	INFN Perugia
8	CERN-EP
9	INFN - Sezione di Bologna

WP 4.1.5 Blue sky research: novel sensor materials

No.	Institution
	SNU-HFR (Seoul National University & 1HFR co.)
	2Iowa

WP 4.1.x propose a new WP

No.	Institution
1	CalVision

Next steps

- **Draft of the proposal / work package program -topics**
 - Deliverables
 - Milestones
- **Meeting with the participants:**
 - next week
- **Include the WP proposal in the DRD proposal**