

DRD4 WG3 TOOLS AND TECHNOLOGIES

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What follows is a fully open proposal to start the discussion.

WG3 focuses on the technologies of radiators, optical elements, control systems, readout and software for PID detectors.

It aims at gathering competences and contributions from all interested groups and experts in the field.

It will organize dedicated sessions during DRD4 Collaboration Meetings, thematic workshops and other networking initiatives.

WG3 will promote constant exchange of ideas and R&D experience, collaboration, synergies and common activities among participants.

Reports and world activity reviews in each field will be produced.

The specific fields of interest of WG3 are grouped in five areas:

- 1 **RADIATORS** Gas, aerogel, liquids, solids; new materials; radiator design and characterization before/during experiment; tunable refractive index gas/aerogel; aerogel: larger modules and higher photon yield; liquid with optical purity for large volumes; dual radiators; circulation systems for fluids; properties monitoring; scintillation.
- 2 **OPTICAL TECHNOLOGIES** Design, construction, characterization; light-weight components; material compatibility; thermo-mechanical properties; coatings (anti-reflection, filtering, wavelength shifting); mirror/lenses and plates, standard and micro; optical glues; new concepts for optics design, aspherical surfaces, chromatic correction, segmentation/multiplexing.
- 3 **THERMO-MECHANICAL ENGINEERING DESIGN** Light, low radiation/interaction length design; materials; temperature monitoring, stabilization, shielding; active local cooling; annealing in situ; coolants; active optics, active alignment systems; high-pressure vessels; radiation shielding.
- 4 **OPTO-ELECTRONICS READOUT OF THE SENSORS** Readout, f/e, b/e, high-rate/high-bandwidth DAQ, trigger/self-trigger; low-consumption f/e; rad-hard components; design for extended temperature ranges; mitigation of radiation effects.
- 5 **ANCILLARY INSTRUMENTATION** Instrumentation for control of systematic uncertainties; calibration/alignment/monitoring; measurement, online/offline of: sound speed, refractive index, transparency, fluid purity, temperature/pressure of radiators, mirrors/others position/alignment/transmissivity/reflectivity, light intensity; gain, photo-detection efficiency; devices for DSS.

Questions:

- Any other root theme?
 - ▶ Applications outside PP?
 - ▶ Quality Assurance?
 - ▶ ...
- Initial list of Keywords?
 - ▶ Exchange of knowledge, new ideas and fresh results.
 - ▶ Cross-fertilization/Common developments
 - ▶ Modularity, Scalable Integrated Systems, Vertical Integration.
 - ▶ Technology Transfer in/outside the community.
 - ▶ Technology Importing.
 - ▶ Eco-Friendship Technologies.
 - ▶ Cost-Effective Technologies.
- Is *sharing* of our concern?
 - ▶ Shared Laboratory Facilities?
 - ▶ Shared Measurement Instrumentation?
 - ▶ Shared Infrastructure For Prototyping?
 - ▶ Shared Infrastructure for QA?

- Interested Groups:

- ① **RADIATORS:**

- Bologna, Bristol, CERN, London, Marseille, Oxford, Trieste.

- ② **OPTICAL TECHNOLOGIES:**

- CERN, Ferrara, GSI, London, Oxford.

- ③ **THERMO-MECHANICAL ENGINEERING DESIGN:**

- CERN, Genova, London, Oxford.

- ④ **OPTO-ELECTRONICS READOUT OF THE SENSORS:**

- Barcelona, Bari, Bucharest, Cambridge, Giessen, Oxford, Perugia, Wuppertal.

- ⑤ **ANCILLARY INSTRUMENTATION:**

- Bari, Genova, Trieste.

END