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Development of the Micro-Pattern Gaseous Detector Technologies: an overview of the CERN-RD51 Collaboration

RD51 is a well-established collaboration with the aim to develop Micro-Pattern Gaseous Detector (MPGD) technologies, to support experiments using this technology, and to disseminate the technology within particle physics and in other fields. Originally created for a five-year term in 2008, RD51 was extended for a third five years term beyond 2018. The rich portfolio of MPGD projects, under constant expansion, is accompanied by novel ideas on further developments and applications. The cultural, infrastructure and networking support offered by RD51 has been essential in this process: this effort will continue thanks to the RD51 extension. Also in the next years, a collaborative R&D phase and the right environment will have a strong impact on project-oriented activities - similarly to the current scenario where three of the major upgrades for the LHC experiments benefited from the RD51 framework. The vast R&D program requires acquiring additional, up-to-date expertise in advanced technologies; it is also expected to enrich our basic knowledge in detector physics, to form a generation of young detector experts - paving the way to new detector concepts and applications. RD51 and MPGD success is related to the RD51 model in performing R&D: combination of generic and focused R&D with bottom-top decision processes, full sharing of "know-how", information, common infrastructures. This model has to be continued and can be exported to other detector domains.

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