

CPAD RDC6

Update of R&D Priorities

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Update of R&D priorities

- The role of the RDCs was covered in Jonathan Asaadi's talk this morning
- RDC6 is focused on Gaseous Detectors
- The RDCs typically update their R&D priorities once a year
- These priorities are intended to be a succinct list of overarching goals for generic and blue-sky R&D on gaseous detector R&D, covering both HEP and NP.
- We are currently running a [poll](#) for the 2026 update:
- Please fill out this poll before 8pm Wednesday, October 21, so that we may summarize and present the results during CPAD 2026.
- Motivation: you can cite the RDC priorities when applying for funding.

2025 R&D Priorities

<https://docs.google.com/document/d/1sc-W2FbIbv8dmrXPkAvoEIDRNFhTK7Xw/edit?pli=1>

RDC6: Gaseous Detectors

- **RDC6-WP1: Advancing gaseous detector readout to the fundamental sensitivity limit**
This includes efforts towards single-electron counting, negative ion drift (NID), ps timing, and ASIC readout.
- **RDC6-WP2: Developing new gas amplification structures for challenging environments**
Such environments include gases w/o quencher, NID gases, high charge densities, and very high or low gas pressures.
- **RDC6-WP3: Achieving cost-effective scaling of gaseous detectors to large sensitive volumes and/or large readout areas**
This includes efforts such as data reduction and multiplexing via AI/ML on the frontend, new materials and mechanical structures, strip readout, and modularization schemes.
- **RDC6-WP4: Achieving improved particle identification in gaseous detectors**
Modalities include precision timing, cluster counting, and dE/dx .
- **RDC6-WP5: Establishing production facilities in the United States**
This includes efforts to fabricate MPGD amplification and readout devices.
- **RDC6-WP6: Reducing the environmental impact of gaseous detectors**
This includes development and adoption of alternative gas mixtures and gas recycling schemes.

2026 R&D Priorities

https://cpad-dpf.org/?page_id=1715

Areas of R&D Priorities

Topic Area	Description
RDC6-WP1	Advancing gaseous detector readout to the fundamental sensitivity limit
RDC6-WP2	Developing new gas amplification structures for challenging environments
RDC6-WP3	Achieving cost-effective scaling of gaseous detectors to large sensitive volumes and/or large readout areas
RDC6-WP4	Achieving improved particle identification in gaseous detectors
RDC6-WP5	Establishing production facilities in the United States
RDC6-WP6	Reducing the environmental impact of gaseous detectors
cRDCs-WP1	Intelligence in the front-end electronics
cRDCs-WP2	Timing distribution with picosecond synchronization
cRDCs-WP5	Readout electronics for sub-10ps timing detectors

Other items

- Please subscribe both the the CPAD (general) and RDC6 mail lists:
 - CPAD@LISTSERV.FNAL.GOV
 - cpad_rdc6@fnal.gov
- See https://cpad-dpf.org/?page_id=1526 for how to subscribe

Discussion

- Do you have any special requests or feedback?
- Would like to see regular RDC6 meetings?