XVIII Conference on Resistive Plate Chambers and Related Detectors

September 14, 2026 - September 18, 2026

Scientific Program

The International Conference on Resistive Plate Chambers and Related Detectors - RPC Conference will continue a long tradition of scientific meetings, which began in Lecce in 1991 and has continued with biannual events in cities such as: Rome, Pavia, Napoli, Bari, Coimbra, Clermont-Ferrand, Seoul, Mumbai, Darmstadt, Frascati, Beijing, Ghent, Puerto Vallarta, Rome, Geneva and Santiago de Compostela. The eighteenth edition, in 2026, returns to Latin America, being the first time in Brazil, in the city of Rio de Janeiro, with the support of the University of Rio de Janeiro (UERJ) and the Brazilian Center for Physics Research (CBPF), which recognize its fundamental role in the development of detector technologies with wide use for the global community of particle physicists.

Resistive Plate Chamber (RPC) detection techniques are widely used in elementary particle and astroparticle experiments. The conference will focus on both the performance of the detection technology and possible upgrade scenarios for large RPC systems, as well as applications outside the context of particle physics, such as medical physics applications such as positron emission tomography (PET), border control and the study of large structures. The most challenging issues in physics at the moment are related to the search for dark matter, long-lived particles, astroparticle physics and physics in high-energy colliders.

This requires new challenges in detector layout, front-end electronics, materials, gas mixtures, aging and new ideas to improve detector performance in the domain of signal readout rate capability and spatiotemporal resolution.

This is therefore a traditional event of great importance to the global scientific community. Historically, invited speakers are internationally recognized researchers, offering a unique opportunity for postgraduate students and researchers to attend high-quality lectures and interact in a conducive environment. The main discussion topics of the conference are listed below.

HEP performance

The session is dedicated to the operation and performance of RPC/MRPC systems in HEP experiments (efficiency, timing, rate capability, trigger/reconstruction, stability, Run/upgrade performance.

Production and QA

This session is dedicated to the detector production, assembly, industrialization, and QA/QC: procedures, acceptance tests, certification benches, reliability, logistics, and commissioning.

HEP and Beyond HEP Applications Techniques

This session is dedicated to the applications of RPC technology in and beyond HEP (e.g., muography/tomography, medical imaging, security, neutron detection, cosmic-ray telescopes), including readout and system techniques enabling these use cases.

Alternative Mixtures and Longevity

This session is dedicated to Eco-gas R&D and long-term operation: low-GWP mixtures, gas systems/recirculation, irradiation and aging studies, impurities, and mitigation strategies.

Physics and Simulation

This session is dedicated to the detector and system simulations (signal formation, space-charge/avalanche, transport, irradiation facilities), plus physics-performance studies driven by modeling and reconstruction.

Applied research and new ideas

This session is dedicated to exploratory R&D and new concepts: novel detector structures/ materials, front-end electronics/DAQ, timing innovations, advanced algorithms (including ML), and unconventional applications or approaches.