

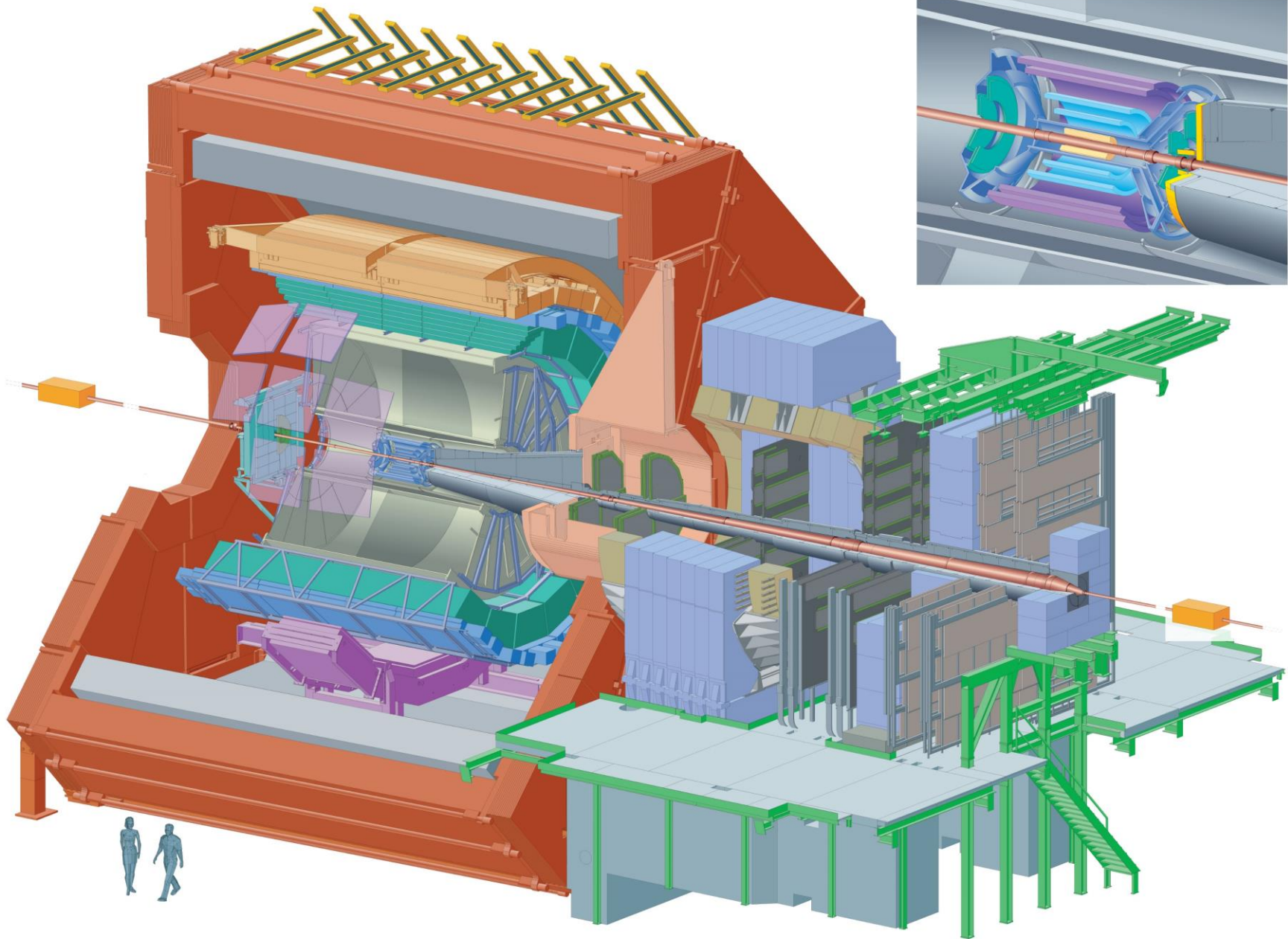
COMMISSIONING OF ALICE TRD DURING LS2

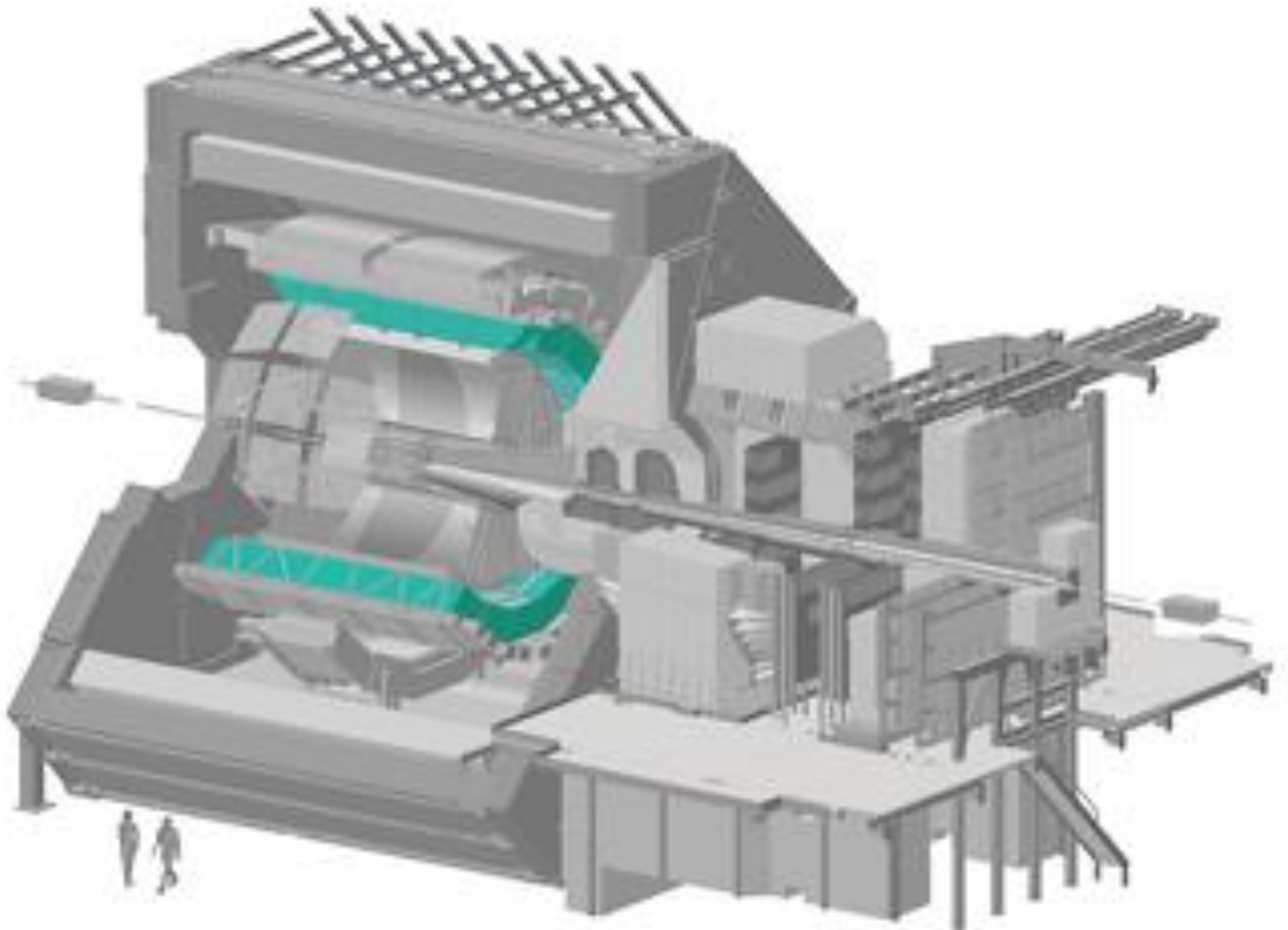


ALICE EXPERIMENT



- **A** Large **I**on **C**ollider **E**xperiment
- Specialized for collisions of heavy nuclei
- study the physics of matter at the highest energy
- quark-gluon plasma
 - State of the universe for the first few millionths of a second after the Big Bang

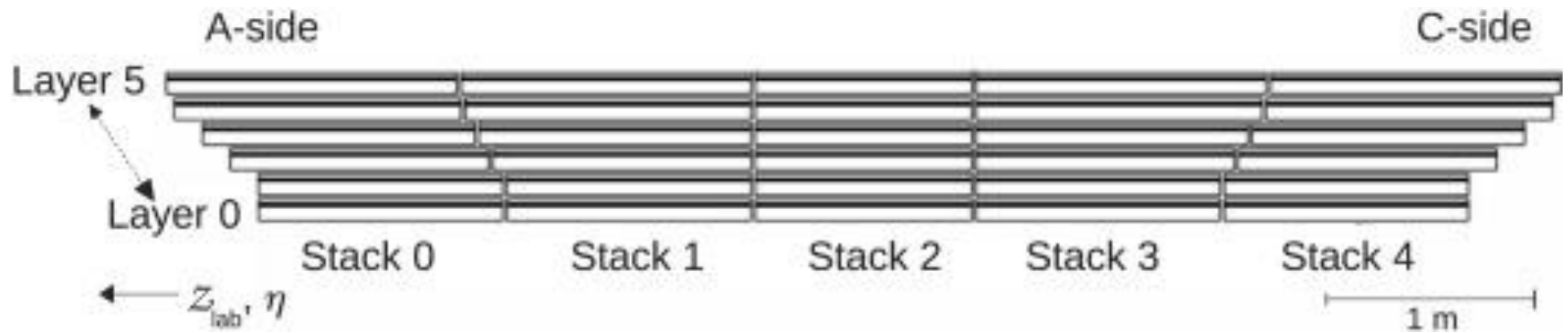




TRD



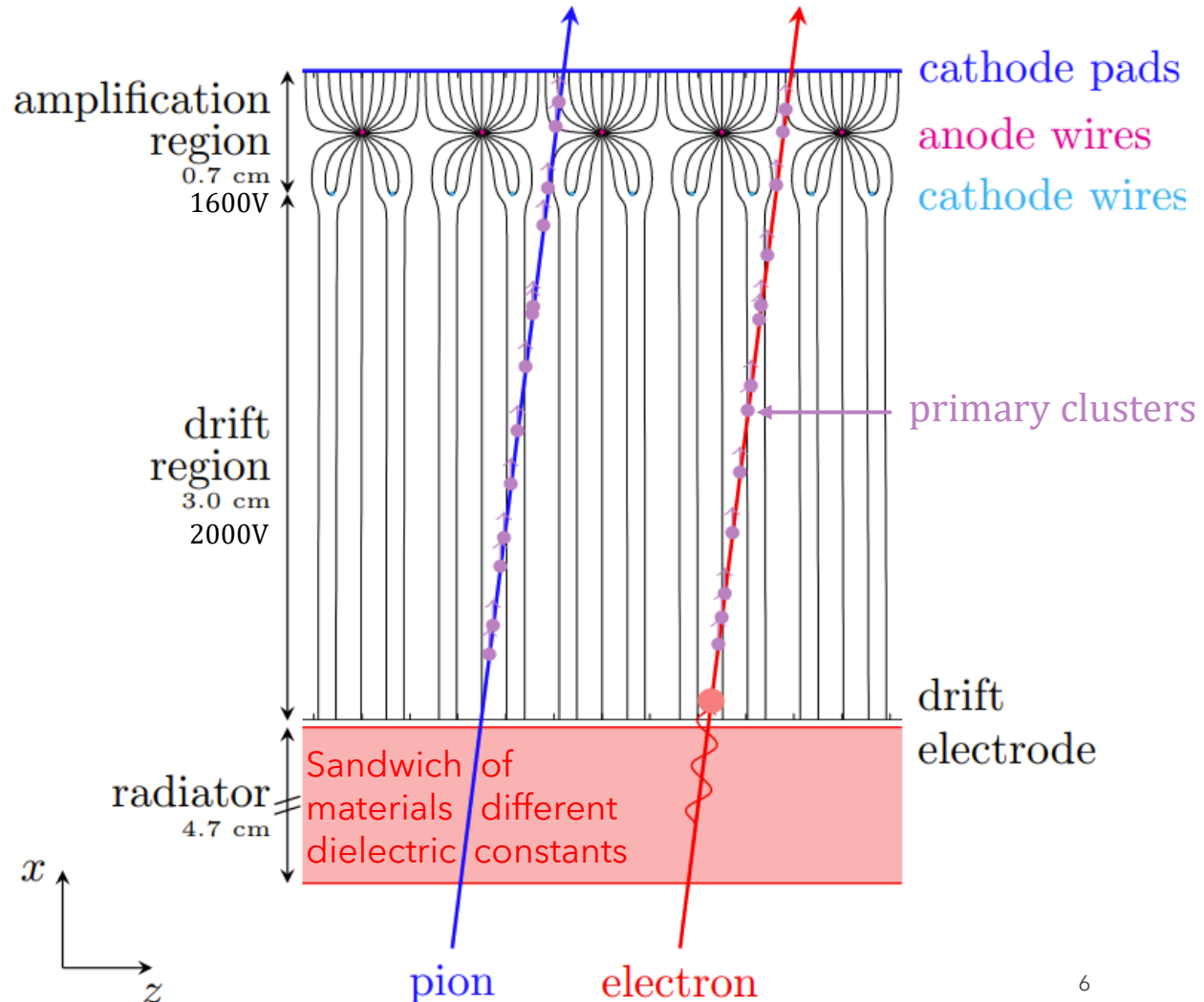
- 18 supermodules
- 540 readout chambers
- Tracking and particles identification



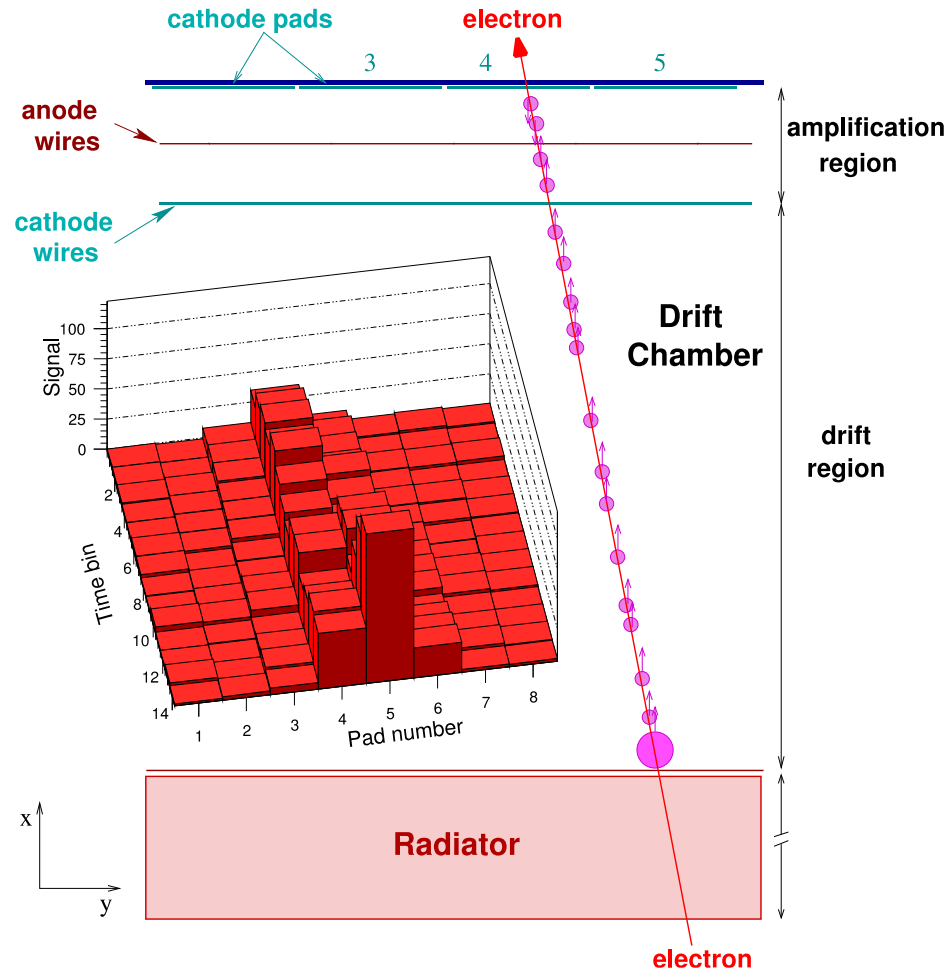


FUNCTIONING OF THE TRD

- particles with enough energy ionize atoms and molecules
 - Xe/ CO₂ (85/15%)
 - particle tracks
- When highly relativistic charged particles cross the boundaries between materials, this can lead to the emission of TR photons
 - x-ray photons
 - differentiation of particles



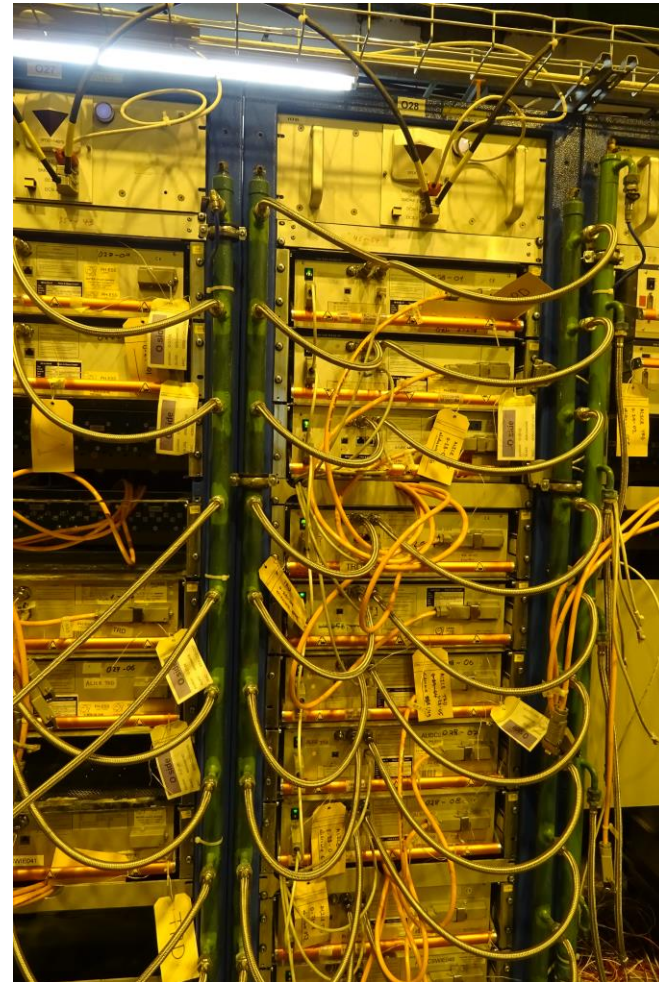
FUNCTIONING OF THE TRD



LOW VOLTAGE POWER SUPPLIES REWORK



- Rework of the water fittings of all ALICE Wiener LV power supplies
- about 100 pieces belong to TRD
- Reinstallation in the experimental cavern

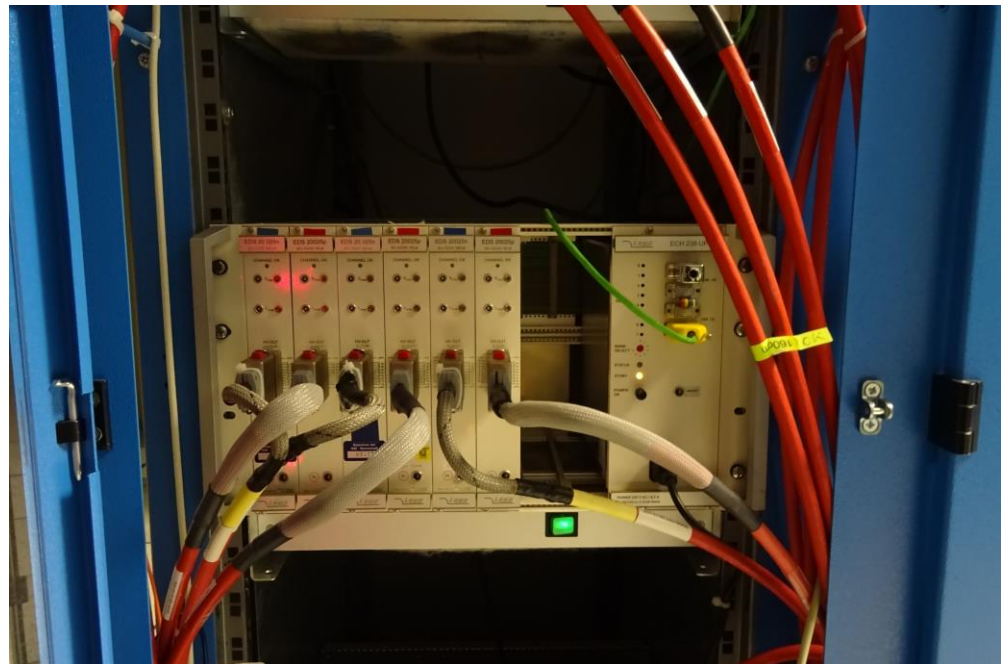


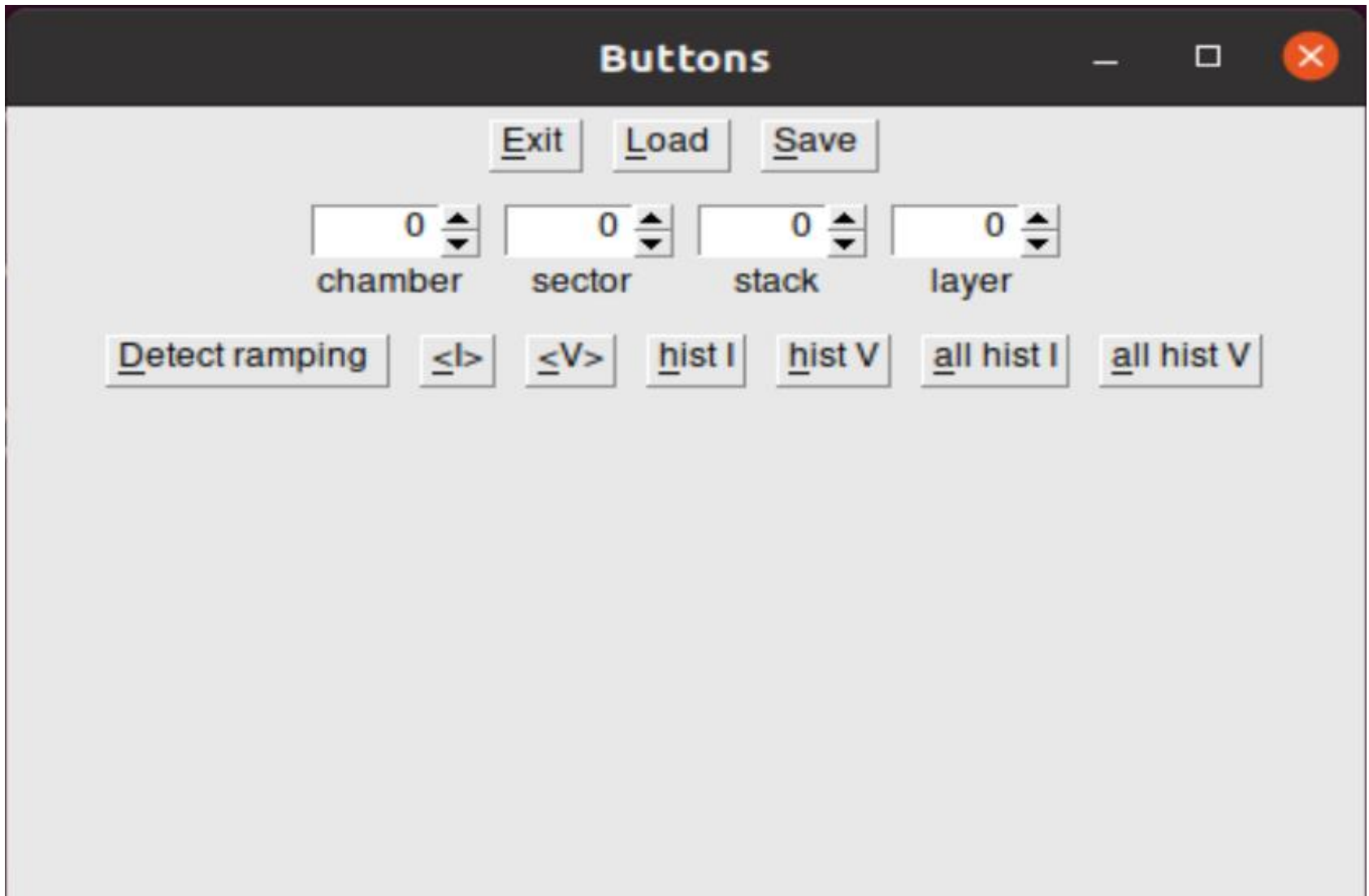
SOFTWARE-RELATED TASK



development of a program with GUI for high voltage data analyses

- ISEG high voltage power supply → 18 x 30 channels
- the goal is to verify the stability of voltage and current over time
- Data from 24hr test of 2 power supplies in 2019 after firmware upgrade
- program written in ROOT/C++
 - makes histograms of voltage and current values
 - finds mean value and deviation (fit with Gaus function)

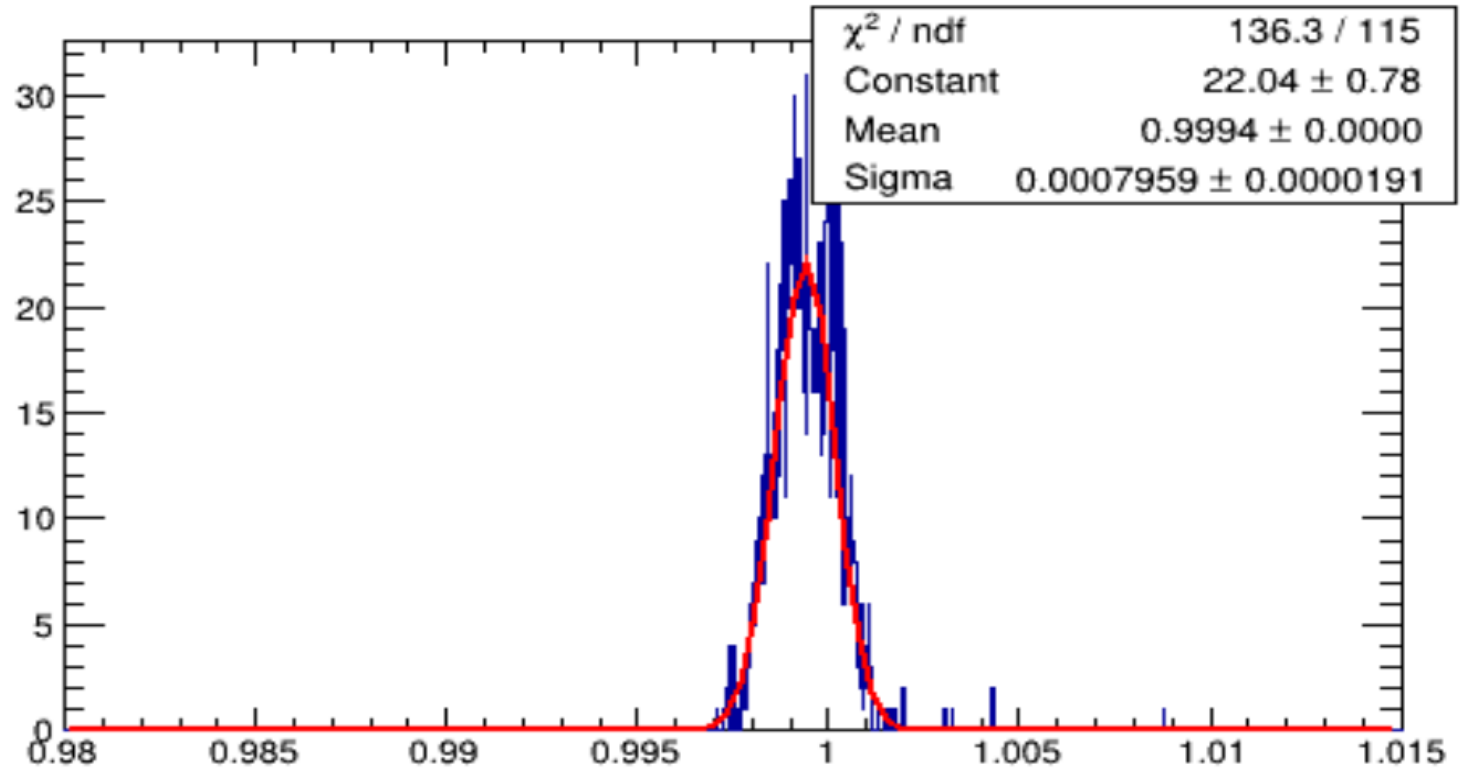




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File Edit View Options Tools

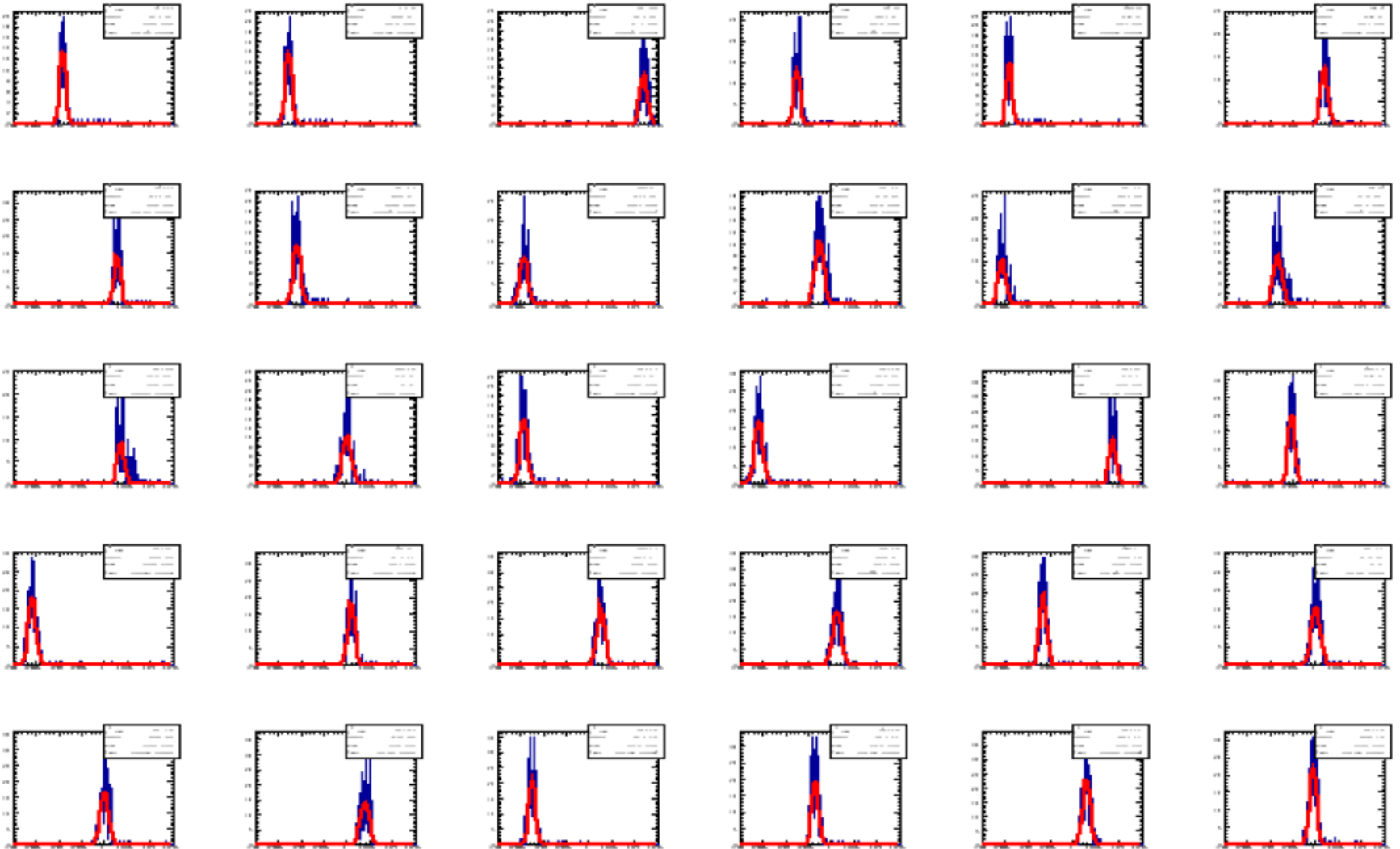
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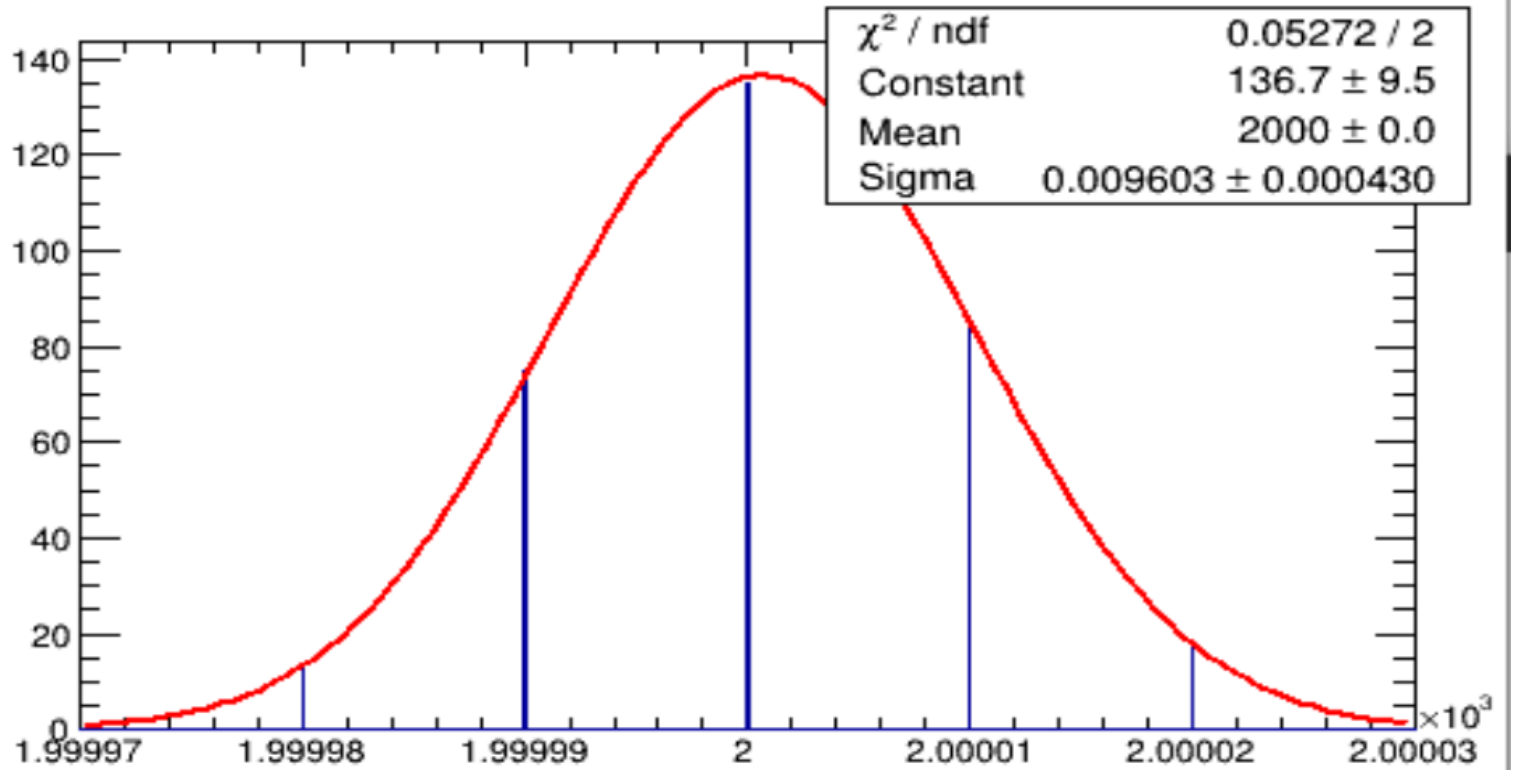
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File Edit View Options Tools

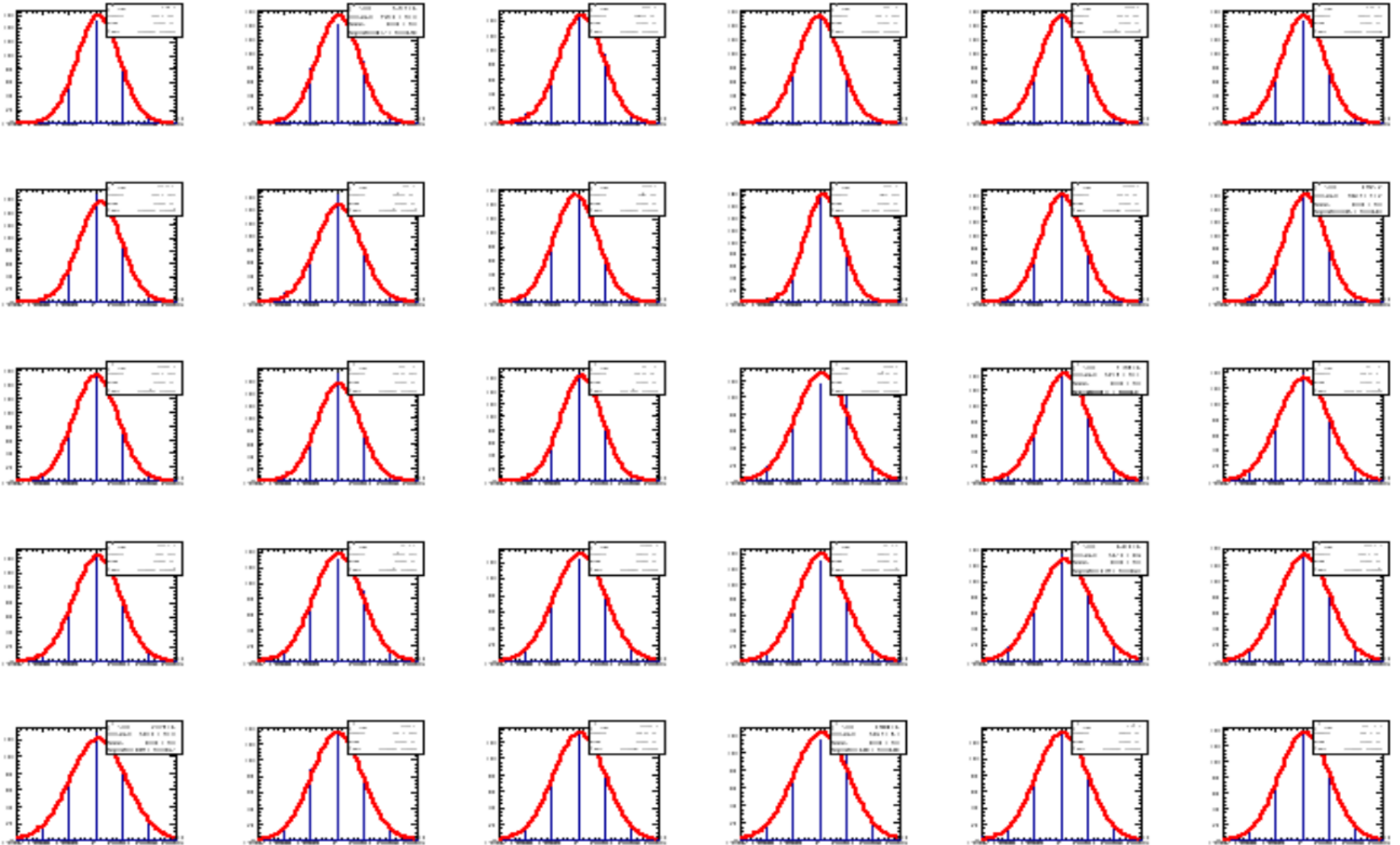
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File Edit View Options Tools

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BIBLIOGRAPHY

- ALICE Collaboration. (2001). Technical Design Report of the Transition Radiation Detector. Geneva: CERN.
- ALICE Collaboration. (2008). subdetectors. Von aliceinfo.cern.ch: <http://aliceinfo.cern.ch/Public/en/Chapter2/Page3-subdetectors-en.html> abgerufen
- home.cern. (2020). heavy ions and quark gluon plasma. Von home.cern: <https://home.cern/science/physics/heavy-ions-and-quark-gluon-plasma> abgerufen