

24th IEEE Real Time Conference



中国科学院近代物理研究所  
Institute of Modern Physics, Chinese Academy of Sciences

# Design of the Front End Electronics for the Prototype of HERD Transition Radiation Detector

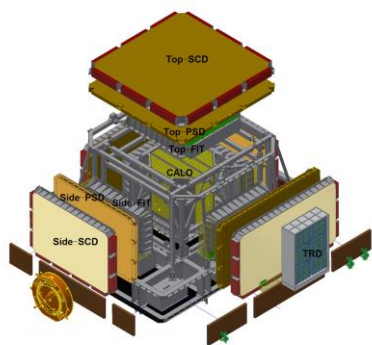
**Jieyu zhu**  
on behalf of HERD-TRD Collaboration

**25/04/2024**  
**Quy Nhon, Vietnam**

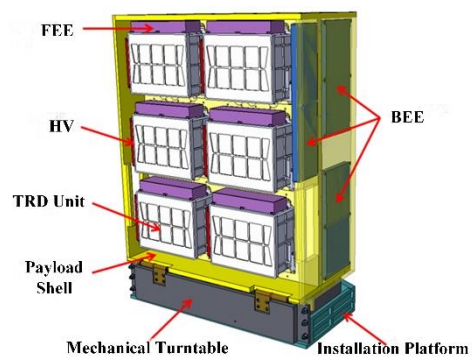


## ——The TRD detector system of HERD

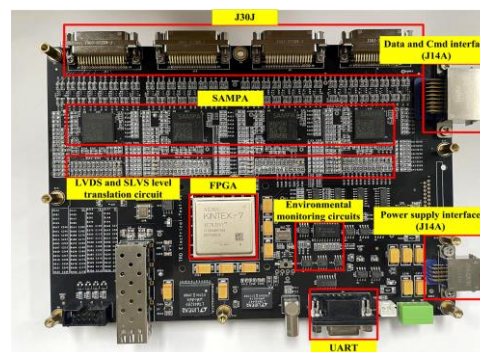
Space astronomy and particle astrophysics experiments planned for installation **on the Chinese Space Station in 2027**



HERD



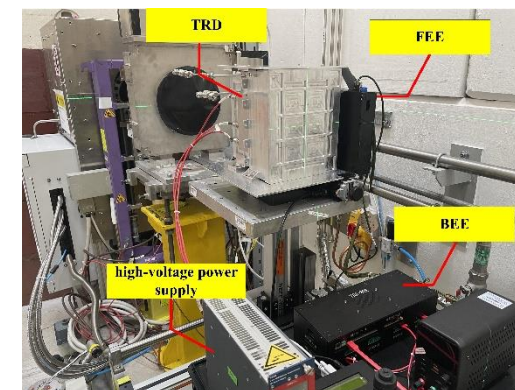
TRD



FEE

### Challenges in electronics design:

- high reliability requirements
- Complex space environment
- 756 Multi-Channel Data Transmission
- Selection of validated data
- Low power consumption design



Beam test in CERN

The sealed gas detector will first large-scale used in space exploration.

### Scientific goals of TRD:

- The calibration of the TeV energy range of the CALO.
- The detection of high-energy gamma rays.

Based on SAMP4 ASIC, we designed the FEE for the prototype of the TRD.