



university of
 groningen

kvi - center for advanced
 radiation technology

Technical Design Report for the:
 PANDA Data Acquisition and Event Filtering

PANDA DAQ Workpackages

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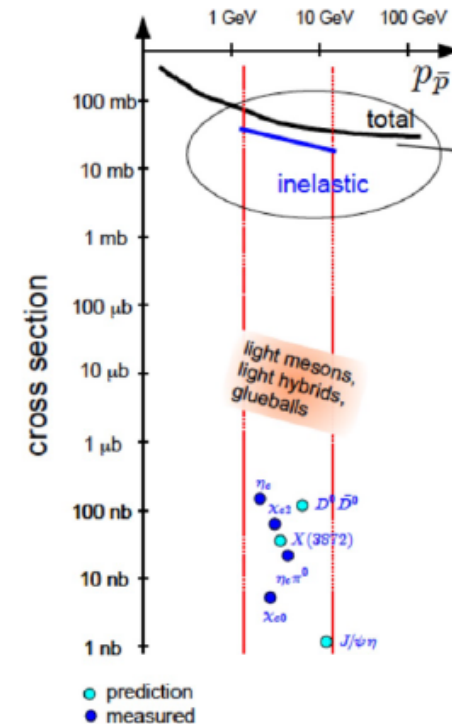
for the PANDA collaboration

(AntiProton Annihilations at Darmstadt)

Strong Interaction Studies with Antiprotons

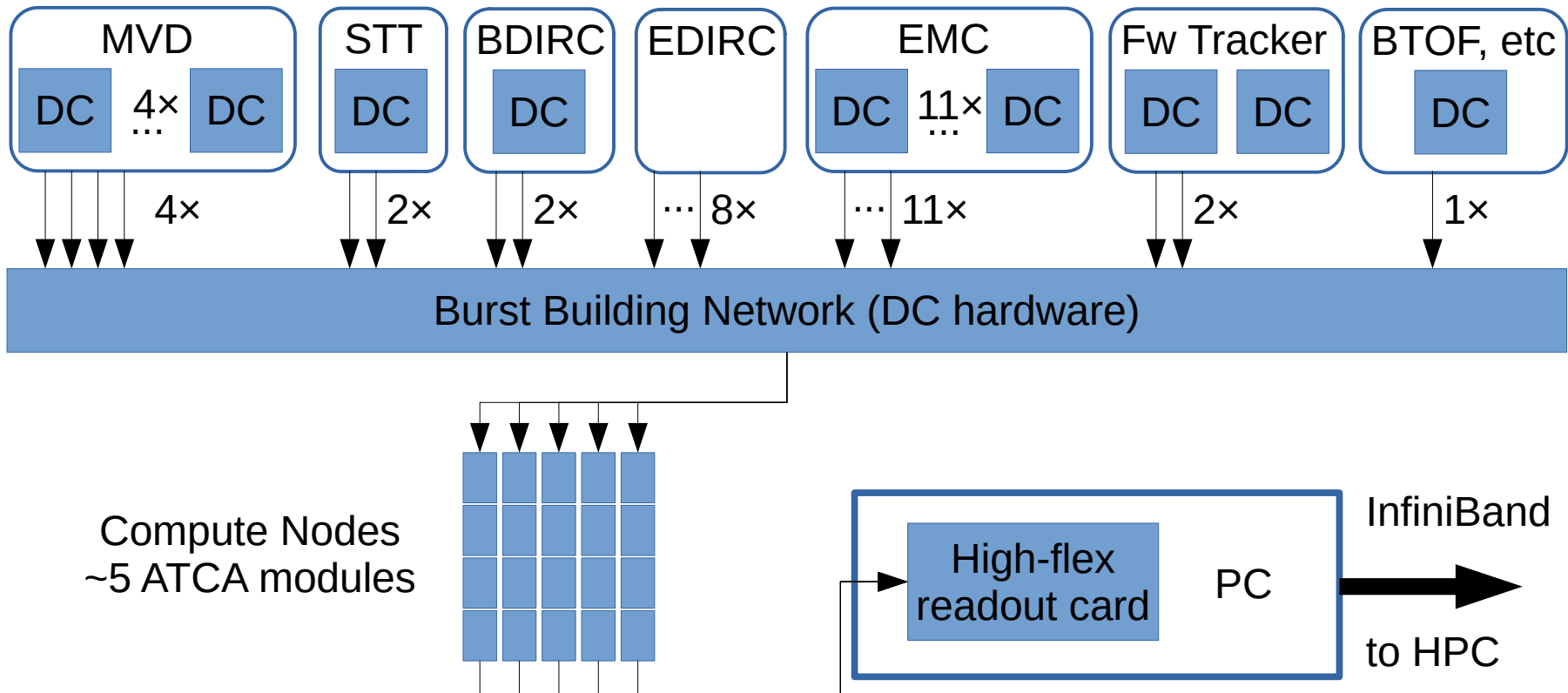
PANDA Collaboration

November 7, 2018



Push-Only Readout

4 (MVD) + 16 (STT) + 20 (BDIRC) + 9 (EDIRC) + 0.6 (BTOF) +
12.7(EMC) + 24(FwTracker) = **86.3 Gbit/s**



DAQ-related work packages: Hardware

(R&D, design, testing, production and screening)

- **Data-collector board based on EMC digitizer**
(part of FEE, required by LUMI, EMC (Hit-detection ASIC) , other subsystems?):
 - prototyping, principle investigations (Bochum) – ? py
 - hardware design (Uppsala) – ? py
 - production screening (Uppsala?) – ? py
- **Data Concentrator**
(core of the DAQ, used for the burst-building network as well)
 - hardware design (Uppsala) – ? py
 - prototype testing/debugging (?) – 1 py
 - production screening (Uppsala?) – ? py
- **Compute Node**
 - design/testing/production (IHEP) – ? py
- **HPC interface**
 - design/testing/production (KIT?) – ? py

DAQ-related work packages: Firmware

(R&D, design, testing)

- **SODANET**

- support, development (???) – 1 py
- DAQ-accelerator interface (???) – 0.5 py

- **Framework for data-handling IP cores and Communication protocols**

- development / testing / deployment (???) – few py

- **Data-processing algorithms**

- Event-building (???) – ? py
- Burst-building (???) – ? py
- Tracking (Lanzhou?) – ? py
- FW tracking (Krakow)
- EMC Clustering, support (???) – 0.5 py

DAQ-related work packages: Software

(R&D, design, testing)

- **DAQ functionality** (so far only SODANET protocol)
(???)
- **DAQ control** (communication with DSC, ECS)
(???)
- **DAQ – online computing interface**
(???)
- **Stand-alone DAQ** (RUG/GSI/KIT/Bochum/Julich)

Development/deployment strategy:

- Develop stand-alone DAQ
- Stimulate of the stand-alone DAQ by all subsystems
- Deploy DAQ at FAIR

**Substantial effort is required in terms of manpower!
Common funds will not solve the problem...**