# Accelerated Computing

GPUs and FPGAs in the PPD Linux Cluster

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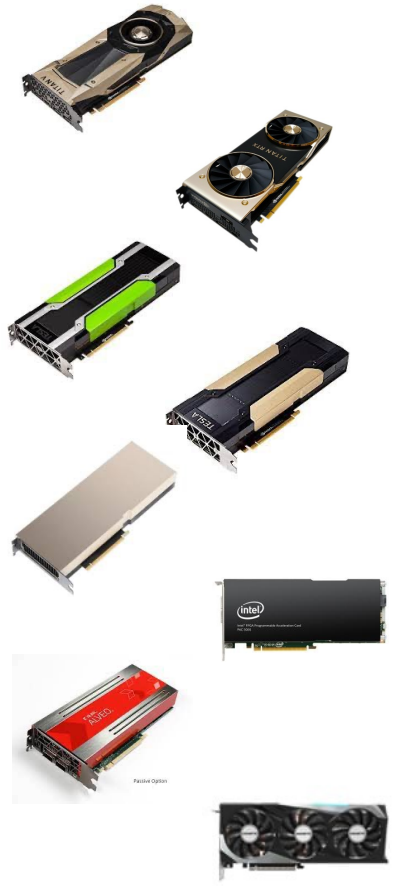
# Disclaimer!

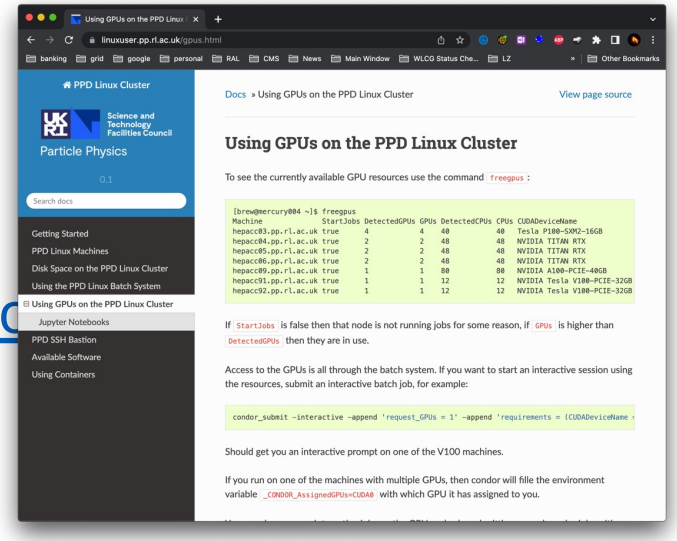
# Available Hardware

- 2 Nodes with 2 x Nvidia Titan V (Atlas)
- 3 Nodes with 2 x Nvidia Titan RTX
- 1 Node with 4 x Nvidia P100
- 4 Nodes with 1 x Nvidia V100 (Cloud)
- 1 Node with 1 x Nvidia A100
- 1 Node with 1 x Intel PAC D5005 FPGA
- 1 Node with 1 x Xilinx Alveo U250 FPGA
- 1 Node with 1 x Radeon RX6900XT (Atlas)



# Access, Software and Documentation

- Access via regular PPD Linux Account
- “Testing” machines are login and go (as long as no-one else is using it)
- “Production” machines are part of the condor batch system
  - Us an interactive job to get an interactive session
- All machines have the CUDA*, CVMFS and the
- Usual home, data and experiment file systems
- (Some) Documentation at:
  - https://linuxuser.pp.rl.ac.uk/index.html
  - https://stfc365.sharepoint.com/sites/ParticlePhysicsHub/acc
    ng/SitePages/Home.aspx



# Who's using them:

- Abdeslem: Infrastructure Development and operations, user support, porting track pattern matching algorithms from GPU to FPGAs, new device and technology evaluation
- Manny: Developing a lightweight Neutral Net algorithm to implemented on a FPGA for HL-LHC online vertex reconstruction of proton-proton collisions.
- Fergus: Machine learning for physics analysis
- Dmitry: Track finding algorithms on GPUs
- Raja and Sajan: GPUs for LHCb RICH photon tracing (optiX)
- Alison (Elliot): Developing and benchmarking trigger and reconstruction algorithms, starting with tracking and vertexing algorithms on FPGAs
- Ian (Tomalin): Using HLS to write track finding/reconstruction algorithms on FPGAs in the CMS Trigger

# What Next?

# What next?

- More Hardware, possibly an AMD MI100
- More use of the Cloud nodes, including possible dynamic scaling of resources
- Regular meetings?