Brief ppRDO Update, 21 June 2024

- Implemented fiber readout of ppRDO to a PCIe Receiver Board in a DAQ PC
  - I used the Trenz TEF1001 PCIe card with the Trenz TEF0008 SFP card as the "FELIX" equivalent in a DAQ PC running Linux ⇒ this is the setup we use at STAR
  - this enables readout and control of the ppRDO from a Linux PC ⇒ as it will be in EPIC
  - I didn't want to change the STAR firmware of the TEF so I am not running the full equivalent of the FELIX-to-RDO protocol
    - and it's running at only 3125 Mbs (same as in STAR)
  - However, we could put the ppRDO in the STAR environment instantly, as-is, and have it readout and controlled with STAR software using existing spare PCIe cards and DAQ PCs!
    - I am considering doing this in the FY25 STAR run to check SEUs and play with schemes on how to deal with them
    - having it in-beam all the time gives me a lot of time to look at all the SEU-related issues and their fixes
    - need to find a good position in STAR for it (Tim, other STAR folks…)
      - 1 network-controlled LV power supply ~5V, 2A
      - 1 fiber pair to the STAR DAQ Room
      - I have a PC and a TEF card already in the DAQ Room, as a spare

- I did this so I can play with the readout in Zagreb right now, HOWEVER I would really like to use the VD100 Versal-based PCIe card as the FELIX ⇒
  - this enables us to have the equivalent of the EPIC DAQ Readout Setup which would normally use FELIX
  - but I don't know how to get it to Zagreb without paying a lot for customs duty?

- Next steps
  - I discussed the data format with Frederic & Christophe (Omega) for EICROC2 as well as the clocking and Fast Commands and I will implement the ASIC emulators for 32 ASICs in the ppRDO
  - right now I will do this with the GHDL simulator in software and later transpose it to ppRDO
  - this will take some time to do right but then we will know
    - all required FPGA resources (I have fears that Artix may not be enough for 32 ASICs…)
    - full FPGA power needs (will be measured by Tim)
    - have a SEU testbed (especially if we can install it in STAR for next year)

Photo Shows