Ideas for Trigger Exercise - PO&DAS 2023

- **People:**
  - Confirmed: Artur, Juliette
  - If needed, we could ask: Tobias Quadfasel (he developed all the timing tools for Run 3), Manuel Sommerhalder (he developed the new multi run harvesting tool for Run 3). Other UHH students involved with trigger are finishing thesis… (Finn Labe did a B2G trigger tutorial for HLT-level efficiency measurements)
- **2 hour exercise**, repeated 3 or 4 times → every student will see our exercise

- One idea from Juliette, off the top of her head: Presentation + interactive part:
  - **What does everyone need to know?** (L1 and HLT)
    - What is L1 and HLT? What is an HLT path? Which objects do we trigger on? What are prescales (and columns), trigger menus, trigger paths? Who uses which triggers and why? How do you use a trigger in your analysis? How do you get your data? How are primary datasets defined? How do you know when your trigger was active, and how much lumi it took? What are different kinds of trigger paths (signal, backup, control)? What is the L1T (DPG,…) and the TSG? How do I apply my trigger to MC? What is a L1 seed? How do you find your trigger efficiency and turnon curve?
    - (Artur): how to find whether the trigger of interests was prescaled or not (I think Sam Harper has some tool for that - via OMS API?)
  - **What do you need to know if you're developing a new trigger?** (L1 and HLT)
    - L1
      - terminology: trigger primitive, EMTF, BMTF, OMTF, …..
    - HLT
      - Rates (pure rates, PU dependency), efficiencies, CPU/GPU timing, monitoring and validation
      - Tools: confDB, etc
      - Mention skims