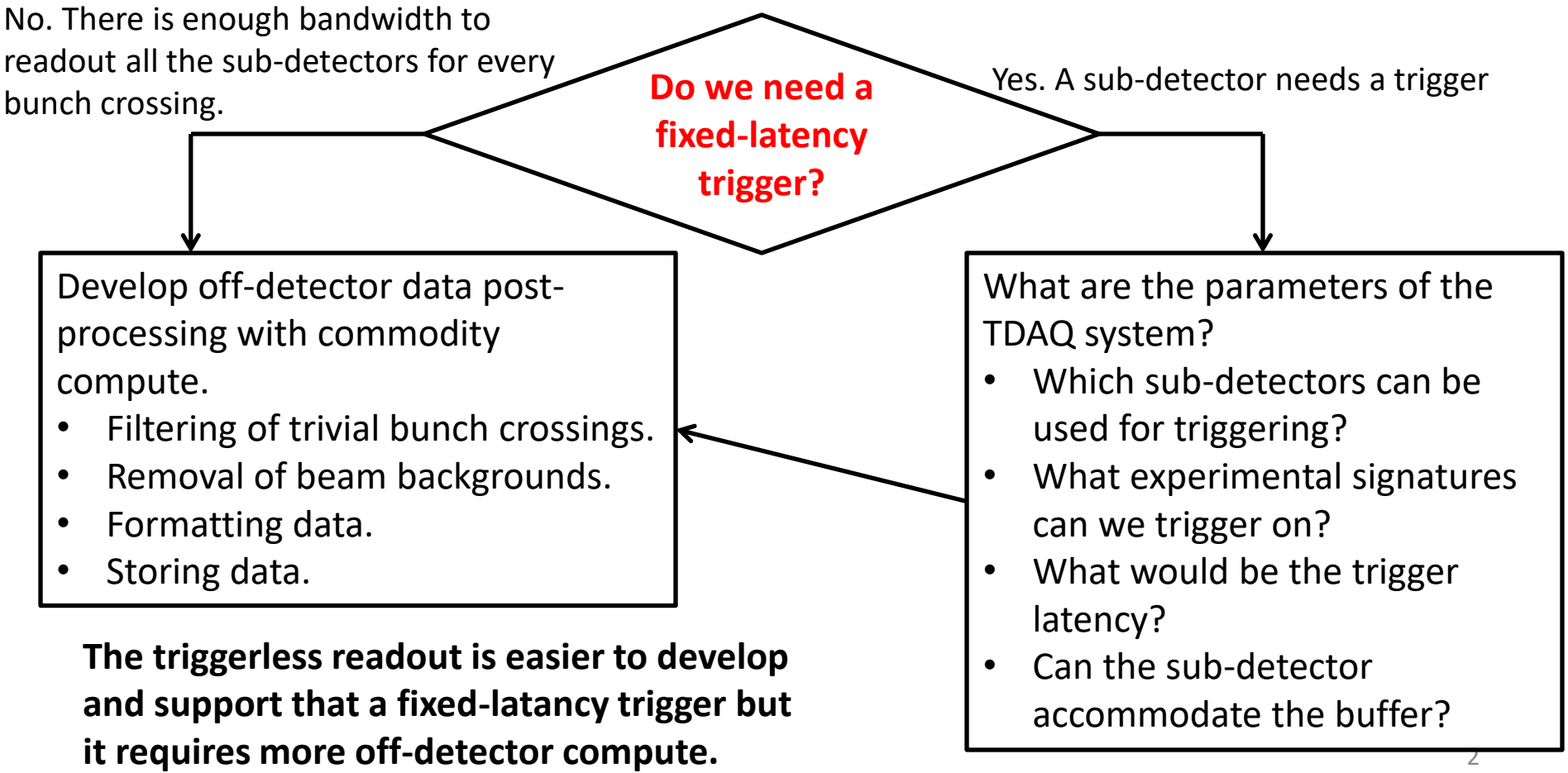
Simulations for TDAQ

Florida Tech, Princeton, Boston U, Northwestern U, Cornell, U of Pitt, CMU, The Ohio State U, MIT, UC Irvine, SMU, Duke, BNL, FNAL, SLAC, ANL

Zeynep Demiragli and Sasha Paramonov
+
Wade Fisher and Peter Wittich

us-hfcc-tdaq@cern.ch

TDAQ Architecture decision tree



The triggerless readout is easier to develop and support that a fixed-latancy trigger but it requires more off-detector compute.

Simulation status

- We need GEANT-based detector simulations with realistic parameters (pixel size, calorimeter sampling range, granularity, data formats etc.) to estimate the data rates.
- Simulations of the vertex detector are central to deside for TDAQ architecture.
- Work is happening internationally. E.g. see Armin's talk
  https://indico.cern.ch/event/1298458/contributions/5987291/attachments/2875496/5035607/Silicon%20tracker%20optimisation_Armin%20Ilg.pdf
- These GEANT datasets can be also used to train AI/ML algorithms for on- and off-detector data processing