pfRICH components

- ➤ HRPPDs
  - ➤ Vary window material, thickness, optical properties (B33 glass with a λ cutoff in particular)
    - ➤ Potentially without an acrylic filter
  - ➤ Use a variety of QE(λ) parameterizations & realistic PDE
    - ➤ [Requires first 5+2+1 EIC HRPPD evaluation input]

- ➤ Aerogel & acrylic filter
  - ➤ Incorporate recently measured transmission curves
  - ➤ Perhaps a bit more realistic tiling scheme for aerogel

- ➤ Mirrors
  - ➤ Implement a more realistic reflectivity curve (as measured on a test stand)

Geometry & Co

➢ Consider allocating more space for ASIC electronics (?) [shorter expansion volume]

➢ Explore pyramid mirrors of variable geometry (?)
➢ Update conical mirror geometry & vessel material budget

➢ Consider decreasing HRPPD installation gap [presently 3.0 mm]
  ➢ Assuming HRPPDs with rounded corners + a face seal configuration

➢ Incorporate a recent B-field map
➢ Verify Z-vertex smearing

Reconstruction engine

- Implement a more complete timing functionality
  - Imaging & time of flight in one algorithm

- Implement a Max Likelihood algorithm in addition to a χ^2 one (?)

- Fix a well-known bug in a multi-track case in IRT 2.0

- Incorporate an up-to-date Matt's tracking parameterization

"Other" studies

➢ Configurations with two aerogel layers
  ➢ Both focusing and defocusing

➢ Material budget & backward EmCal performance [repetition of Sasha's studies]
  ➢ Not really a standalone simulation, but an update of pfRICH material budget is required

➢ Gas photons [repetition of Mikhail's studies]