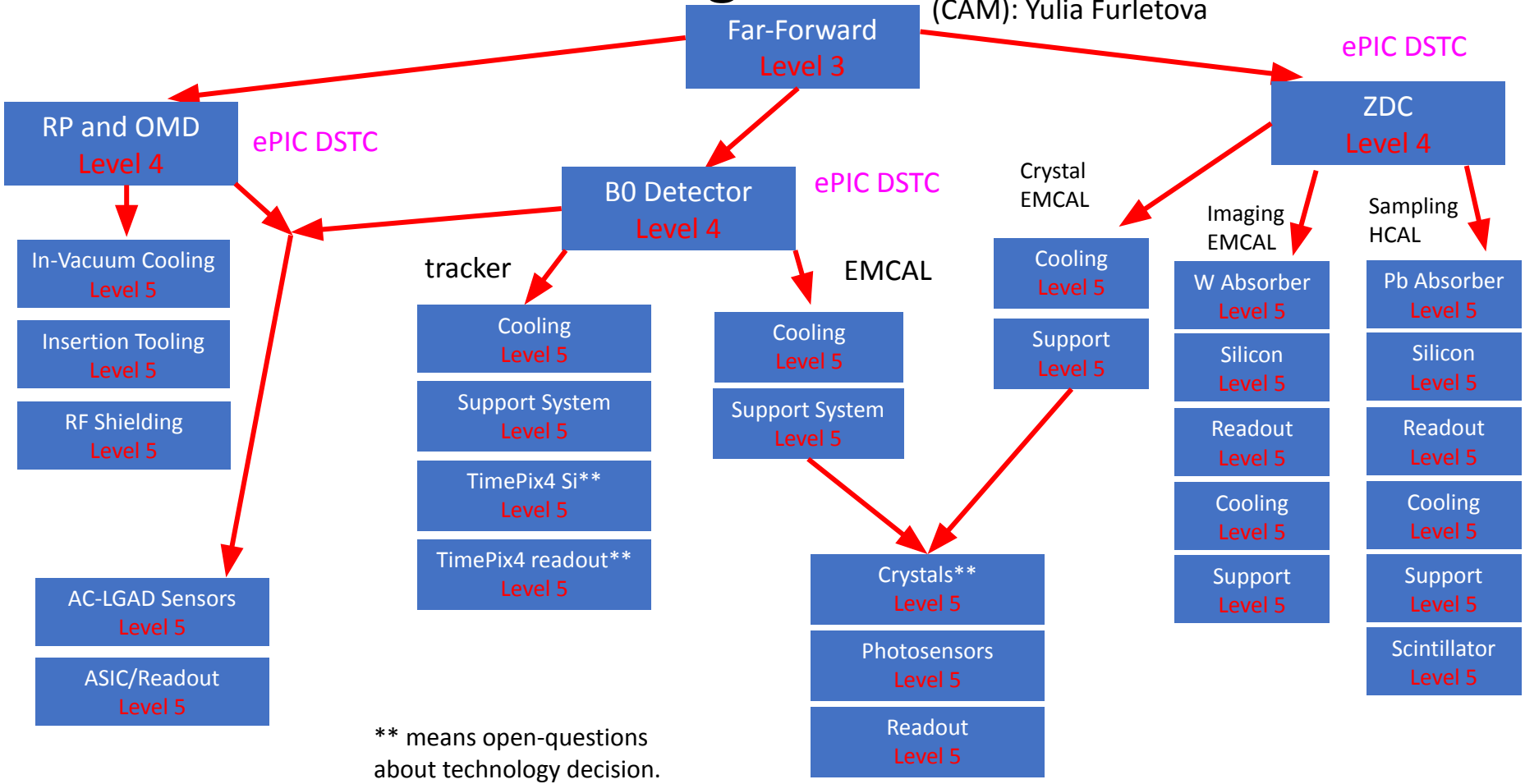
Work Packages for ePIC Far-Forward Detectors

Updated: June 13th, 2023

Far-Forward Work Packages



RP and OMD WP Breakdown

Institutions: BNL/EIC project

- In-vacuum Cooling
  - Need to cool ~100 Watts per plane (4 planes for RP, 4 for OMD) in-vacuum.
  - Use of thermal cooling required (closed loop gas system likely too risky).
  - Potential need for external LN2 dewar.
  - **NEED:** engineer with understanding of heat transfer and cooling.
- Insertion tooling
  - Need system to insert RP and OMD packages to correct location, and retract to injection location.
  - Requires low-density support rails, motors and actuators, power, and must operate in-vacuum.
  - **NEED:** mechanical engineer
- RF shielding
  - Need shieling system for detector packages to protect from stray RF damage, and to reduce impedance to the EIC hadron beam.
  - **Need:** engineer with accelerator RF experience.

B0 WP Breakdown

Institutions: BGU, HUJI, TAU

- Support system (tracker + EMCAL)
  - Front access based rail system to install and support detectors
  - **Mechanical engineering need**
- Cooling (tracker + EMCAL)
  - Requirements (especially temperature stability) will be determined by technology choice
  - **Engineering needed**
- Crystals and Silicon
  - Still need final technology choice, difficult to break down further before this

Common Components Across Sybsystems

- AC-LGAD sensors
  - AC-LGAD consortium + vendor for sensor.
- EICROC readout
  - IJCLab, OMEGA, and AC-LGAD consortium.
- Scintillating crystals, may be common between ZDC and B0, potential for efficiencies still TBD.