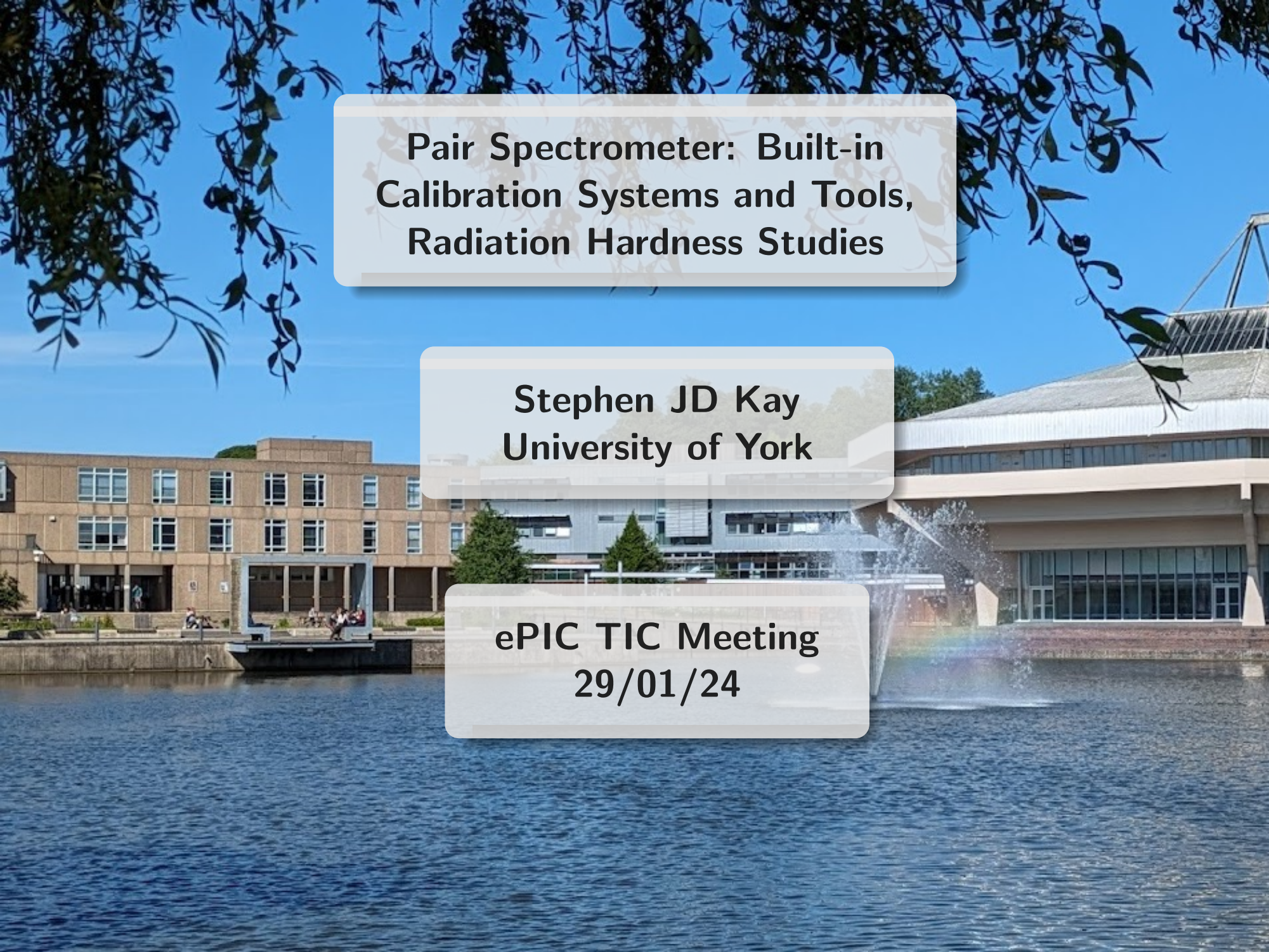

Pair Spectrometer: Built-in Calibration Systems and Tools, Radiation Hardness Studies

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ePIC TIC Meeting
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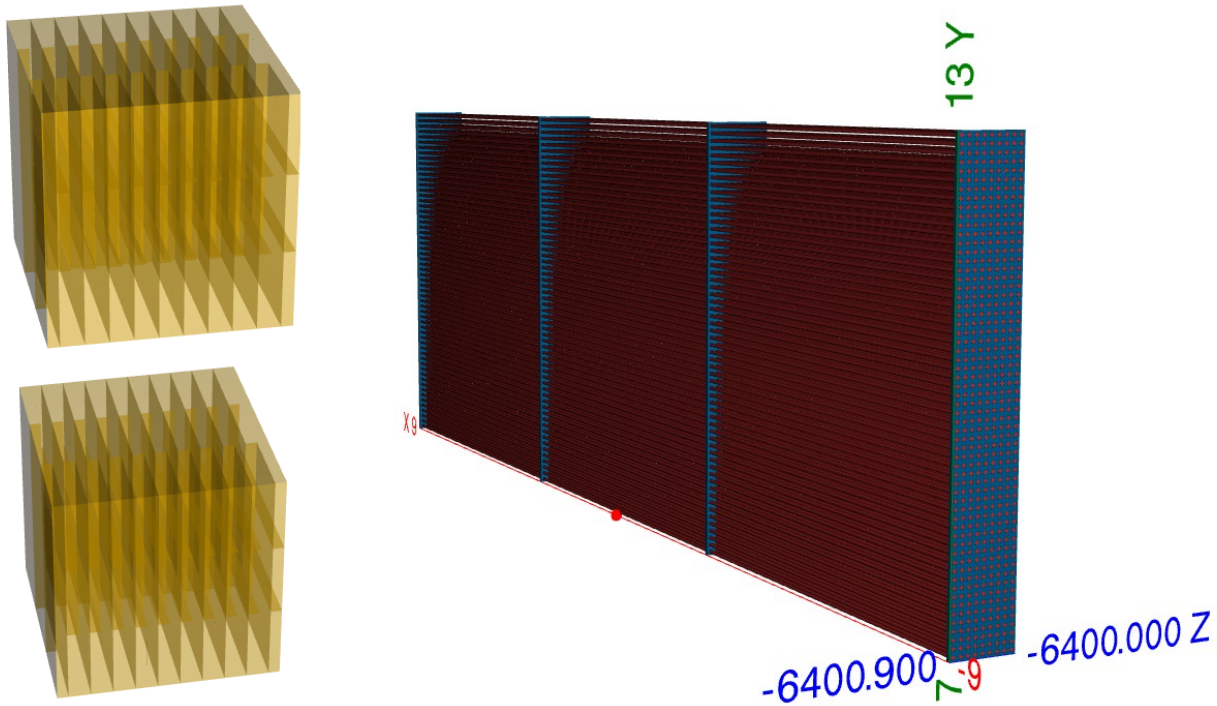
Radiation Hardness

- **Radiation hardness not a major concern for the Pair Spectrometer Calorimeter.**
- Design of calorimeter is very similar to that of the FECal.
  - See Oleg's slides from TIC meeting on 11/12/23.
  - Epoxy for PairSpec same, no concerns.
  - Scintillation fibers, no concerns.
  - SiPMs/readout electronics, no concerns.
    - Space/flexibility in design to move if problematic.
- Regardless, plan detector tests with prototype at A2 (MAMI) to verify. Focusing on SiPM performance.

Monitoring Systems - Pair Spectrometer Layout

- Pair spectrometer calorimeter - two $18 \times 18 \times 18$ cm^3 cubes.
- Each cube formed of 20 layers, each 0.9 cm thick.
  - Each layer formed of three modules.
  - Scintillating fibers running along length of module.
  - Readout from one end of module only.



Monitoring Systems

- Readout from one end leaves space for LED system at other.
  - Widely used elsewhere, utilise similar principles.
  - Can monitor LY, correct performance of system as needed.
  - Co-ordinate with fECAL group on monitoring system
- Temperature monitoring system for SiPMs.
  - Add system for monitoring, space available for cooling.
- Extra redundancy for system from complementary detectors
  - Low Q^2 Tagger.
  - Pair Spectrometer Trackers.
  - Not self monitoring aspects... but, a nice extra redundancy.