An FCC Perspective on Detector R&D

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Outline

1 Basic questions

2 Landmark achievements

Four questions

What are we talking about?

- (Obviously not about the Federal Communications Commission)
- Let's widen it out and talk about Detectors R&D for any beyond-HL-LHC collider experiment

When is this needed?

- 2040?
- Subtract 10 years for construction
- Subtract 5 years for forming collaborations
- Subtract n years for establishing national support

Why are we doing this?

- Tracker or Calorimeter?
- Connections to present-day detector activities?
- Connections to nationally available technologies?
- Connections to emerging physics interests?

How much money can it cost?

- Don't expect the fresh, additional money up-front
- Particularly not unless we also invest *own* funds

Four landmark achievements

Giga-channel EM Cal

- ALICE FOCAL Alpine planes
- Proposed for the NLC/ILC ca. 2000

Full LHC-rate read-out

- LHCb VELO 2 Upgrade
- Also featuring MEMS-channel CO2 evap. cooling

Cylindrical tracker shells

- ALICE ITS3
- Also surprisingly rad.hard

Tens of fb^{-1} per year

- Peak luminosity in Run-3 is already at 2-3x design
- The ATLAS ID is still keeping up