

# AI at CERN and SKA Areas for Collaboration

## Panel

Moderator: Peter Braam

Panelists: Ian Shipsey, Richard McMahon, Nick  
Reese, Terry Lyons

# What were we expecting ....

A narrow focus on computational / ML problems at CERN and SKA

Quickly the question came up what should the structure of a “program” leveraging ML be.

# What did we actually get

**Infrastructure** Rich information about IT needs, industry developments, ML frameworks, chips. Needs for performance and scale.

**HEP / Astrophysics and ML** Very rich set of developments, some fully proven and (almost) ready for use, some probing new approaches, and some pondering foundational relationships between of (astro) physics and ML

**Mathematics / CS** A glimpse of a world of new approaches (rough paths, graphs)

**Thank you to all participants for making the meeting so interesting.**

# Questions for the panel discussion:

Pick one, tell us about opportunities and challenges in:

- (A) **Computational Challenges** at SKA and CERN. Working on IT, chips, frameworks. Short term and long term.
- (B) **New Methodologies**: Computer Science, Mathematics, Physics, Astrophysics. Graphs, Rough paths...
- (C) **Scientific Method** New physics / astrophysics. Relationship between ML and traditional scientific discovery approaches (PDE, Lagrangian approaches etc)

Any blue sky suggestions?