

CLARIPHY - Parallel Sessions

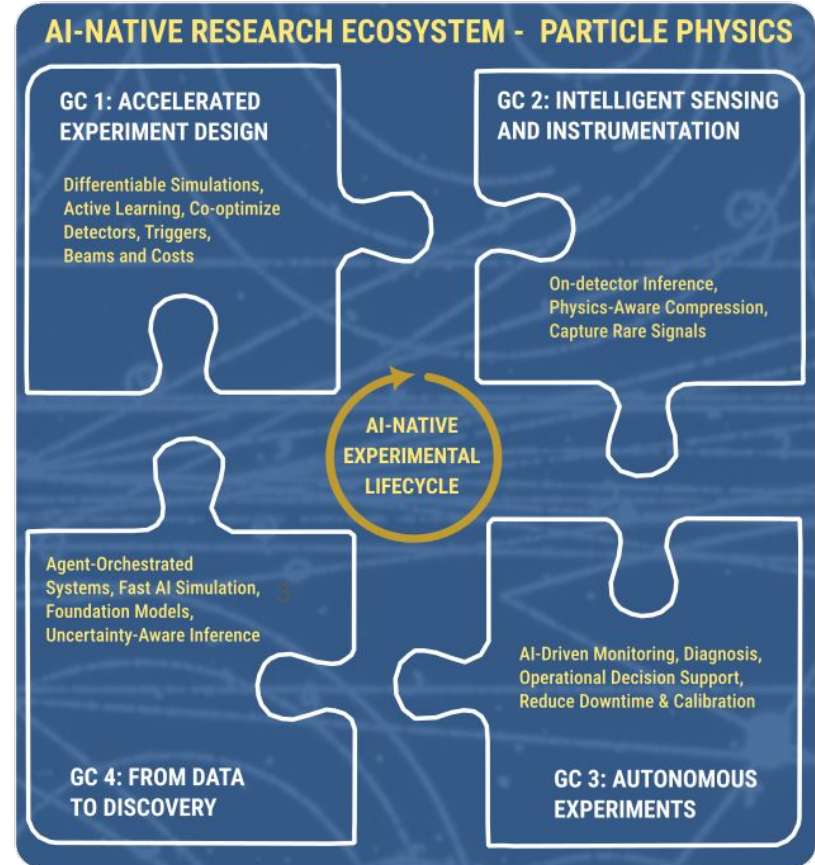
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“AI-Native”: From Design to Discovery

Four inter-connected Grand Challenges^{**}:

- Accelerated design informs intelligent instrumentation
- Intelligent sensing enables autonomy
- Autonomous operation feeds higher-quality data into inference
- From data to discovery closes the loop back to design
- *Together, these challenges define an end-to-end **AI-native experimental paradigm**.*

****Plus some cross-cutting themes and emerging opportunities**



Goals of the meeting

[From Intro talk yesterday]

- Engage with existing funded projects (and new/emerging funded projects) and create links between them and to the community
- Aim for substantive discussion and the formation of initial working groups around key areas
- Identify a set of activities and/or demonstrators that are doable on the time scale of the next ~six months
- Begin to create environments to catalyze both working collaborations and connections for eventual proposals
- Dedicated hands-on training session (Monday morning)

Parallel Session Discussions and Goals

- Where are the most promising scientific and technical synergies across communities?
- What concrete collaborative opportunities could be pursued in the near term?
- What resources, infrastructure, or organizational support would be needed?
- Are there workforce development, training, or community-building needs that should be addressed?
- What are the needs of smaller experiments in this context?
- **Are there achievable goals or demonstrator projects that could help build momentum? (that are doable on the time scale of the next 3-6 months)**

The sessions are intentionally designed as primarily discussion, not presentations. We need to avoid the Scylla and Charybdis dangers of discussion-only:

- Spending all of the time *only* “admiring the problem”
- Outcomes *only* in the vein of “plan to make a plan”

We should aim high and aim for very ambitious goals.

National Scale Collaboration?

U.S. Institutions (blue dots = universities, red dots = DOE labs) that are currently part of large national-scale funded projects:

- U.S. ATLAS Operations (DOE/NSF, 33 institutions)
- U.S. CMS Operations (DOE/NSF, 44 institutions)
- DUNE Operations (DOE, 16 institutions)
- HEP-CCE (DOE, 4 labs)
- IRIS-HEP (NSF, 16 universities)
- A3D3 (NSF, 12 universities)

Additional universities that are part of the U.S. ALICE, U.S. ATLAS, U.S. CMS and (U.S.) DUNE scientific collaborations are shown in green.

Taken together, these overlapping experiments and projects tightly connect 9 DOE labs and 124 different universities and colleges.

