



AI4MuC: Kickoff meeting of the program committee

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Why are we here?

- With the emergence of AI/ML as a revolutionary tool and establishment of the Genesis project, it is important for us to take full advantage of these developments:
 - Develop tools that enable use of AI
 - Deploy AI for various aspects of the R&D to achieve better and faster results
 - Take advantage of potential funding that will come with the Genesis project
- The first step is to identify primary directions (thrusts), determine scope of the required work, identify work plan and potential contributors. Examples of thrusts on slide 5.
- We are already a bit late – need to progress quickly

How we propose to proceed:

- Organize a 1-day mini-workshop in the coming 2 months (March?).
 - Mostly virtual but can book a room at Fermilab for locals
 - 1.5 or two days?
 - Reach out to relevant communities but do not advertise widely, aim for 30-40 participants
- The outcome of the workshop will be a White Paper summarizing the plan, which can be used for the community engagement, funding agencies, Genesis planning, etc
- Organize a broader open community meeting later in 2026

Mini-workshop format:

- Intro talk or two
- Then the workshop will be structured into sessions, each focused on a particular thrust. For each thrust, we propose to structure the agenda this way:
 - 1-2 talks from muon collider experts explaining the needs
 - A talk from somebody with AI experience describing ongoing relevant efforts, tools, etc
 - Discussion
 - ~1.5 hours per thrust?

Example Thrusts:

- Machine design, optimization, tuning, eventual control – from lattice development to particle tracking. Includes development of proper tools etc..
- Technology development and optimization - magnets and quench protection, targets, RF, etc
- Physics-aware detector technology, layout and performance optimization
- Theory developments
- Computing for muon colliders
- Costing model(s) development

What should we discuss today?

- Does the overall plan make sense?
- Identify dates for the mini-workshop
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- Is the proposed workshop structure OK?
- Complete the list of thrusts? You guys are the experts! Should we be more broad or more granular?
- Can we start putting together a list of talks and potential speakers