

AI for Particle Accelerators Hackathon



dimanche 11 octobre 2026 - vendredi 16 octobre 2026

Programme Scientifique

The week combines introductory lectures, hands-on challenge work, daily mentoring, and a final plenary synthesis session. The rhythm is designed to alternate between shared learning and focused team work.

Program table

Sunday 11 October — Arrival (optional)

| Time | Activity |

|---|---|

| Afternoon / Evening | Participant arrival and check-in |

| Evening | Informal welcome, logistics briefing (Jean-Zay accounts, data access policies) |

| Evening | Ice-breaker with resident artists — visual identity kick-off |

Monday 12 October — Day 1: Common Ground & Problem Setting

| Time | Activity |

|---|---|

| Morning (plenary) | **Lecture 1** — Accelerators as AI systems: beam dynamics, collective effects, diagnostics, controls — where ML already works and where it fails |

| Morning (plenary) | **Lecture 2** — ML methods for scientific systems: surrogates, uncertainty quantification, physics-informed learning, anomaly detection in non-stationary systems |

| Morning (plenary) | **Lecture 3** — HPC & AI at scale (Jean-Zay): interactive workflows, data management, best practices |

| Afternoon | Presentation of the three challenges: datasets, metrics, baselines |

| Afternoon | Team formation — 3 groups × 2 teams (contrasting approaches) |

| Afternoon | Hands-on: environment setup, first data exploration, baseline runs |

| Evening | Poster-style session: "What we plan to try" — artists observe and sketch early concepts |

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Tuesday 13 – Thursday 15 October — Days 2–4: Hackathon Core

Each day follows a common rhythm:

| Time | Activity |

|---|---|

| Morning (30–45 min) | Cross-group check-in: progress, blockers, short technical input |

| Daytime | Team work: coding, model training, diagnostics, analysis |

| Late afternoon | Mentor roundtables (accelerator physics, ML, HPC) |

| End of day | Informal wrap-up; artist interaction with teams |

Friday 16 October — Day 5: Synthesis & Confrontation

| Time | Activity |

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| Morning | Finalization of results; preparation of presentations and demos |

| Afternoon (plenary) | **Results session** — for each group: scientific context, Team A vs Team B (assumptions, methodology, performance, interpretability), lessons learned |

| Closing | Cross-cutting discussion: what worked / failed, transferability to real machines |

| Closing | Outlook: publications, follow-up projects, open datasets and benchmarks |

| Closing | Presentation of artistic output — draft comic panels |

| ~16:00 |