



Contribution ID: 206

Type: **Plenary talk**

National AI Initiatives and Opportunities in HEP Instrumentation

Wednesday 8 October 2025 09:00 (22 minutes)

This talk presents an overview of the major national AI initiatives driving today's scientific breakthroughs, focusing on the Department of Energy's AI for Science efforts, including the FASST and hardware-aware AI programs, and the National Science Foundation's AI research institutes and AI2 ecosystem. The presentation highlights how these initiatives foster foundational AI model development, infrastructure, workforce training, and domain-specific research accelerators. Emphasis is placed on the current technical status and emerging opportunities at the intersection of AI and High Energy Physics (HEP) detector instrumentation, including AI-enhanced data acquisition, calibration, real-time processing, and digital twins of accelerator systems. Attendees will gain insight into how AI is revolutionizing detector performance and experimental workflows, opening new frontiers for discovery.

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Session Classification: Plenary

Track Classification: Plenary