

PANEL DISCUSSION

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Overview

Panelists:

- David Keitel (U. Balearic Islands & IAC3)
- Rodrigo Tenorio (U. Milano-Bicocca)
- Sascha Caron (U. Radboud University & Nikhef)

Three main topics:

1. Einstein Telescope & AI: Key Challenges and Opportunities
2. Scientific Datasets as AI Drivers
3. Europe, AI, and Industry Collaboration

1. Einstein Telescope & AI: Key Challenges and Opportunities

1. **Extreme Data Regime**

Continuous, overlapping signals lasting hours will fundamentally change GW data analysis compared to LIGO Scientific Collaboration — what are the main computational and statistical challenges?

2. **Real-Time Detection & Alerts**

Multi-messenger astronomy requires rapid alerts — how fast must detection pipelines be, and what latency is acceptable for follow-up observations?

3. **Scaling Computing: Bottlenecks & Trade-offs**

What limits ET performance most: hardware, algorithms, or data handling? Should we prioritize raw compute, smarter methods, or new paradigms?

4. **Role of AI vs Physics-Based Methods**

Can AI handle ET's complexity alone, or do we need hybrid approaches combining machine learning with deterministic signal processing?

2. Scientific Datasets as AI Drivers

1. **Designing GW Data for AI Innovation**

How can gravitational-wave datasets (e.g., from the Einstein Telescope) be structured to drive breakthroughs in AI, similar to ImageNet? What makes a dataset a lasting benchmark for both science and industry?

2. **Lessons from Kaggle & Cross-Industry Parallels**

What unexpected solutions emerged from Kaggle challenges, how did they differ from domain-expert approaches, and what parallels exist between GW data and evolving industrial datasets?

3. Europe, AI, and Industry Collaboration

1. **Barriers and Priorities**

What are the main obstacles—technical, regulatory, or cultural—to stronger collaboration between industry and large research infrastructures like the Einstein Telescope, and how are European policymakers currently trying to address them?

2. **Strategic Opportunities for Industry**

How can companies engage with scientific AI projects in a way that both creates value and strengthens Europe's long-term capabilities in data, computing, and expertise?