Agentic Tool usage for Gravitational Waves

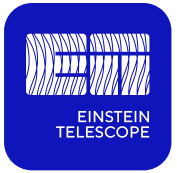
Ulyana Dupletsa











Agentic AI usage in GW group: a general overview

- Coding:
  - Code debugging/optimization
  - Running analyses
    - Recent paper by G. Inguglia
    - Running the MADGRAV pipeline on MUSICA with Claude agents interacting with slurm with reports sent via email

PAPER • OPEN ACCESS

Agentic AI for gravitational wave data analysis: a head-to-head comparison of coding agents executing a matched filter pipeline on Einstein Telescope simulated data

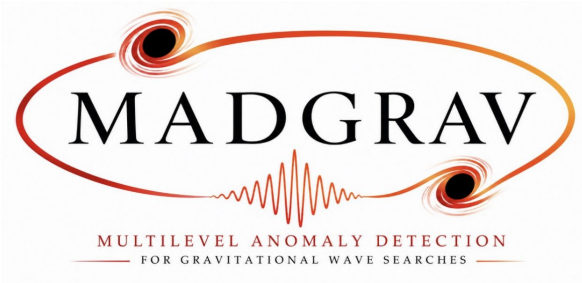
Gianluca Inguglia*

Published 22 September 2026 • © 2026 The Author(s). Published by IOP Publishing Ltd

Physica Scripta, Volume 101, Number 38

Citation Gianluca Inguglia 2026 *Phys. Scr.* **101** 385003

DOI 10.1088/1402-4896/aea65a

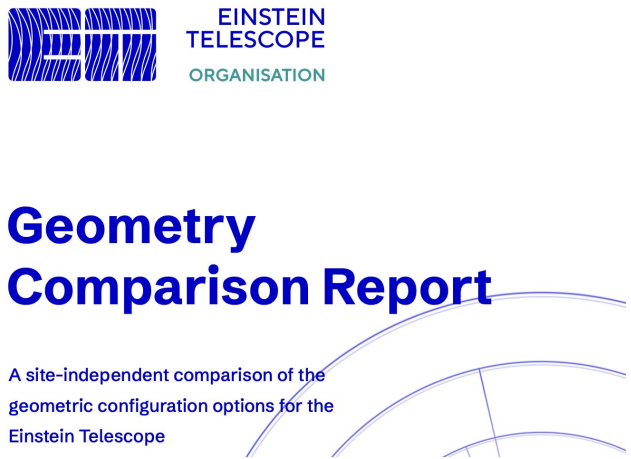


A deep-learning search for high-mass compact binary coalescences in LIGO data.

https://github.com/ginguglia/MADGRAV
Phys. Lett. B 2026 140272,
https://arxiv.org/abs/2609.39583

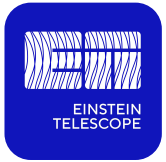
Agentic AI usage in GW group: a general overview

- Text:
  - Consistency checks in text writing (especially when more people are working on the same text)
  - Text format conversion: from LaTeX to doc or to match the specific format of a journal



It took several hours of Claude to convert the LaTeX file into a word doc file!

Future developments: an LLM for Einstein Telescope



- AI4ET division with ET (coordinated by T. Andric and G. Inguglia)
- Gianluca is developing a self hosted LLM to assist collaboration members (specifics are under development)

Thank you!