Stephen Hsu

Title: AI and Frontier Science Research

Abstract: I discuss the current capabilities of frontier AI models in science research. In late 2025 I published the first theoretical physics paper in which the main ideas originated from an AI model. Since then, similar results have been reported by other physicists and mathematicians. I will walk through my research example, including the "Generator-Verifier" architecture ("agent harness") that enables far stronger model performance than one-shot prompts that most users are familiar with. I will discuss my experience working with some of the leading US AI labs to improve model performance in frontier research.

Brief Bio:

Professor of Theoretical Physics and of Computational Mathematics, Science, and Engineering at Michigan State University.

Research interests: quantum field theory, black holes, cosmology, quantum foundations, AI/ML, computational genomics.

BS Caltech PhD Berkeley (theoretical physics). Harvard Junior Fellow, faculty positions at Yale, UOregon, and MSU. Previously Senior Vice-President for Research and Innovation, MSU

Founder of the companies:

SafeWeb (encryption & internet security; acquired by Symantec)

Genomic Prediction (DNA embryo screening for IVF)

Othram (solves crimes via forensic DNA and genetic genealogy)

Superfocus.ai (Agentic AIs and embeddable AI applications)