Discussion of AI in Mathematics

DoMS Colloquium

Dana C. Ernst
Northern Arizona University
October 27, 2026

Who are “we”?

I come to this discussion as a mathematician, but I want to include mathematicians, statisticians, data scientists, and mathematics educators.

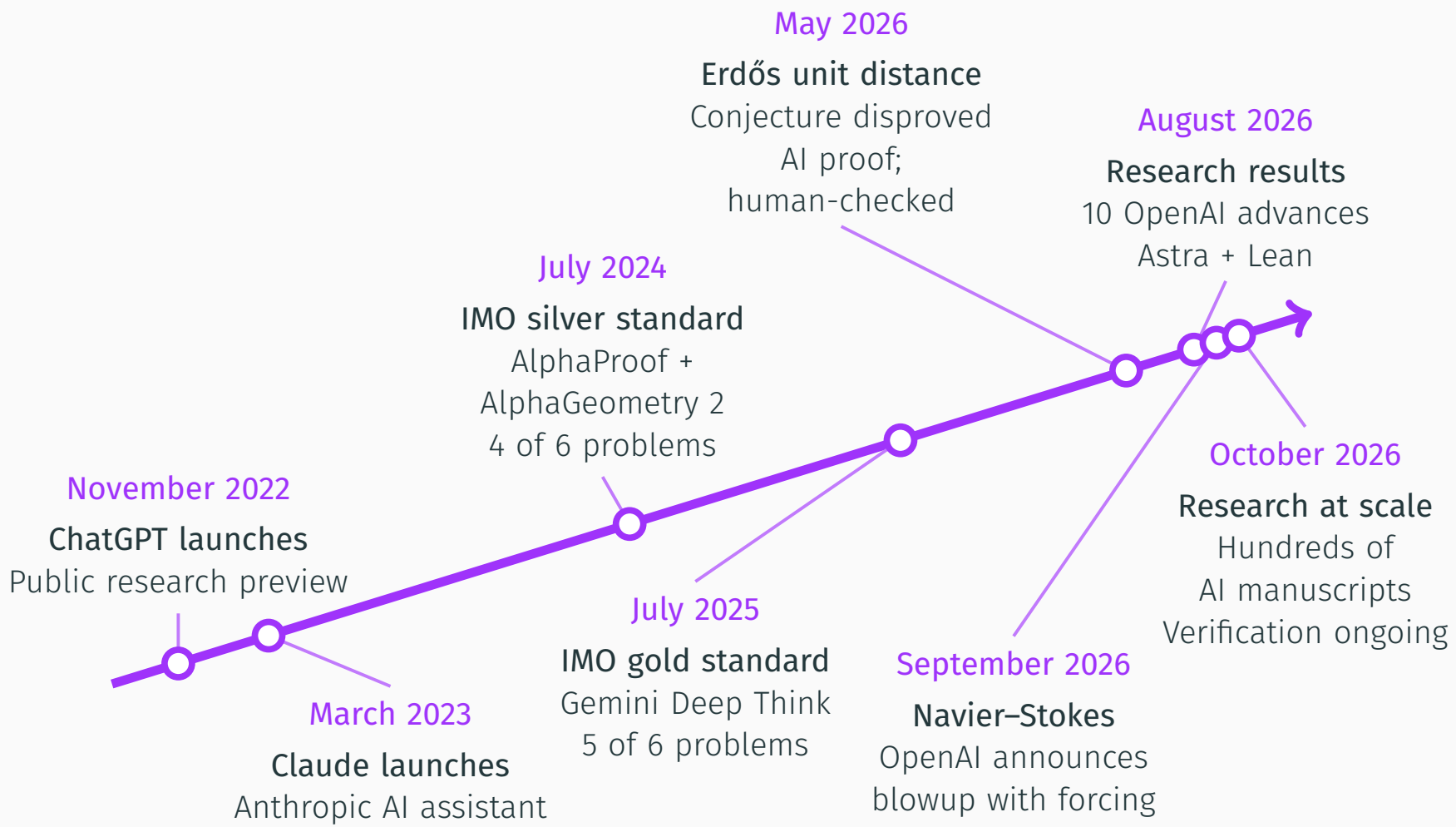
But this is personal: our disciplinary identities matter, and lumping everything together can feel like minimizing what makes each of them distinct.

I’ll use “mathematics+” and “mathematicians+” as shorthand for our disciplines and communities. The plus sign is meant to acknowledge the limits of my own vocabulary and vantage point, not to make anyone else’s discipline an afterthought.

Goals and disclaimers

- AI is upending mathematics+. We differ in how closely we have followed these changes and how much of a crisis they feel like. We need to respect those differences.
- We bring a wide range of perspectives. Some embrace AI and the changes it brings; some move through stages of grief; some refuse to use it. Our views may change daily. Each perspective deserves respect.
- Today is a chance to listen and be heard. Let's begin a discussion, share our feelings, and get a sense of where we each stand.
- One conversation is not enough. This is a first step, not a demand for consensus or a final decision.

AI in mathematics: a timeline



Wikipedia: Mathematical discoveries made with AI

Wonders and terrors

"The first rumblings, I'd say, came a decade ago with AlphaGo, they got noticeably louder with LLMs and coding and reasoning agents, and they've accelerated this summer and fall into a crescendo of wonders and terrors that one needs to be a particular kind of idiot to deny."

Scott Aaronson
Theoretical computer scientist
The University of Texas at Austin

Scott Aaronson: The age of wonders and terrors

Dana's axioms

1. We have a responsibility to engage. Every mathematician+ has a moral obligation to stay informed about AI and discuss its implications with students, friends, and family.

2. Mathematics+ matters to humanity. Its value lies both in its practical uses and in its creativity, beauty, and capacity to deepen understanding.

3. We must shape AI's role in mathematics+. We should decide what AI means for practicing mathematicians+, then let those decisions inform how we teach mathematics+ and communicate its value.

14,000,605 possible futures

Doctor Strange viewed 14,000,605 possible futures in *Avengers: Infinity War*. In only one did they win.

Watch: Doctor Strange's possible futures

Here are just three possible outcomes in our battle:

1. We are the last generation of mathematicians+ as we know them.
2. Mathematicians+ still exist, but what they do and how they do it change fundamentally.
3. Humanity wakes up and decides it wants none of this.

Dana's view: In futures 1 and 2, the romantic, heroic era of mathematics+ ends.

Small-group discussion: AI in mathematics+

In groups of two or three, consider the following questions.

1. Where are you right now? Embracing, accepting, resisting, grieving, still learning, conscientiously objecting, rebelling, or evolving? What is shaping your response?

2. What could change in your work? As a working mathematician+, what might you gain or lose if AI takes on more of what you do? What would you want to keep doing yourself, and why?

3. What should mathematics+ preserve? What makes our work worth doing? What should our communities protect or change as AI becomes more capable?

There is no right or wrong way to engage. Get into the weeds about specifics or be more philosophical.

Further discussion: AI in mathematics+

1. How do we effectively engage with our students about AI in mathematics+?
2. How do we effectively engage with the broader public?
3. How do we effectively engage with NAU's administration?
4. Oh boy... what about our teaching?
5. What else am I missing?

Where do we go from here?

1. These conversations need to continue!
2. How do we make space for productive future discussions?
3. Potential town hall sponsored by NAU Math Club...

I have automated a weekly digest of AI-related developments in mathematical research, teaching, and learning.

Weekly digest: AI and mathematics