The Exit Ramp We're Not Talking About

Why mathematical efficiency is energy policy — and why it matters right now

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Right now, warships are circling a 21-mile-wide waterway because the entire global economy depends on burning things. The Strait of Hormuz crisis — oil at $126 a barrel, shipping down over 90 percent, nations rationing fuel — is not a surprise. It is the inevitable consequence of a civilization that never built the exit ramp.

Here is the part no one is discussing: we are simultaneously building the largest new source of energy demand in human history — artificial intelligence — and using it to do the one thing that could structurally reduce how much energy we need. We are building the exit ramp and the on-ramp at the same time, and the people who should be paying attention are not.

I am an independent researcher with a BFA in Graphic Design. I have no graduate training in mathematics. Over the past eight weeks, working collaboratively with an AI system — Anthropic's Claude — I derived a closed-form formula for the dimension of Hodge classes on products of elliptic curves. The paper is published on Zenodo. The mathematics has been verified. And the result does something very specific: it replaces iterative computation with a direct solution.

That distinction matters more than it sounds.

Every time a computer runs an iterative algorithm — looping, approximating, converging toward an answer — it burns energy. Every cycle of the processor, every pass through the data, every floating-point operation draws power. A closed-form solution skips all of that. It gives you the answer in one step. The difference in energy cost between computing something iteratively ten thousand times and computing it once is not marginal. It is the difference between needing a power plant and not needing one.

One formula does not replace twenty million barrels of oil per day. I am not making that claim. What I am claiming is that this result demonstrates a *pattern* — and the pattern is what matters.

The pattern is this: AI collaboration can find elegant, closed-form solutions in domains where the mathematical community has relied on brute-force computation. Not because AI is smarter than mathematicians, but because the collaboration model — human intuition directing AI formalism, lateral thinking paired with verification — searches a solution space that neither human nor machine covers alone. My result is a proof of concept. If the pattern generalizes across mathematics, physics, materials science, engineering optimization, logistics — every domain where iterative computation currently dominates — then the cumulative reduction in global compute demand is not trivial. It is structural.

And here is the recursive piece: the AI systems doing this work are themselves among the fastest-growing consumers of electricity on Earth. Data centers are projected to consume up to 12 percent of U.S. electricity by 2028. If AI can be systematically directed toward finding the mathematical efficiencies that reduce the need for brute-force computation — including the computation that AI itself performs — then the technology partially offsets its own energy footprint. This is not a paradox. It is an engineering strategy. But it requires intent. It requires funding. It requires someone to recognize that mathematical elegance is not an abstract virtue — it is an energy resource.

We do not have a Strait of Hormuz problem. We have a dependency problem. The strait is a symptom. The disease is an economy that cannot function without continuous, massive, physical throughput of combustible material — and a technological infrastructure that is adding to the demand rather than replacing it.

The fix is not only solar panels and wind turbines, though we need those. The fix is also efficiency at the deepest level: the mathematics that tells the machine what to compute, and how, and whether it needs to compute at all. Every closed-form solution that replaces an iterative approximation saves energy every single time it runs, forever. Every AI collaboration that finds one of these solutions is producing a permanent reduction in energy demand.

I did this work without funding, without institutional support, without credentials in the field. I did it with a consumer AI product and eight weeks of focused effort. The result is modest in scope and significant in implication: the tools exist, right now, to begin systematically reducing computational energy demand through mathematical optimization. No one is organizing this effort. No one is funding it. No one is treating it as what it is — energy infrastructure.

The ships are stopped in the strait. The price of oil is spiking. Nations are rationing fuel. And somewhere in the gap between a brute-force algorithm and a closed-form solution, there is energy we will never need to burn.

We should start looking there.

Kyle Reiser is an independent researcher. His paper "A Closed-Form Formula for the Dimension of Hodge Classes on Products of Elliptic Curves" is available on Zenodo (DOI: 10.5281/zenodo.19421359). His ongoing thesis project, Solution = Continue, explores AI-human collaboration as a framework for mathematical and philosophical research.