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Mathematical thinking in fusion engineering

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At seventeen, I could not decide between pursuing a maths or physics degree. My parents had not attended university, and my sixth form had little experience supporting STEM applications. So, the school brought in a careers advisor who asked a simple question: which subject is your favourite? I said maths. He recommended physics.

Now twenty-five, I am a graduate computational physicist working in fusion research. Fusion engineering asks, how do we make and sustain an operating fusion power plant? The scientific research that *informs* this engineering asks, what matters most? What do we need to investigate, understand, model and eventually predict?

But when I joined the graduate scheme two years ago, my theoretical physics background gave me a different perspective. In nature, there exists many beautiful patterns, however big or small, and there exists some mathematical theory to describe its beauty best. It is not aimless but need not be practically motivated either.

In this poster, I share my technical journey, from theoretical physics to engineering science, and demonstrate how mathematical elegance fits into applied research. I also reflect on this journey as a woman of colour from a disadvantaged socio-economic background, and lessons I have learned along the way.

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