Homepage:

I am a mathematician currently working as a doctoral student at the University of Bristol. This site is a hub for my work and productions, as well as providing a platform for me to discuss my interests.

My mathematical work currently centres on the application of functional analysis, geometry and topology to problems in quantum mechanics and quantum field theory. Beyond this my mathematical interests span many fields including, but not limited to, quantum information and dynamical systems.

In addition to my academic work, I have undertaken many of my own projects which can be found on this site. Since my time as an undergraduate student, I have produced YouTube videos explaining topics in mathematics and physics, as well as discussing life and university and science more generally. These videos have a combined view count of over 20,000. I also have several of my own programming projects, developing new systems to overcome interesting technical challenges.

The painting of Durham in the header is by Stephen Ward Art, whose work can be purchased at https://www.stephenward-art.co.uk/. I believe the view over Durham city centre to be one of the most beautiful and inspiring anywhere in the world.

Biography:

Until 2022, I studied mathematics and physics at St John’s College, Durham. During my degree I studied many broad areas and attained a high level of knowledge in quantum mechanics, analysis, particle physics, general relativity, condensed matter physics and continuum mechanics. My master’s dissertation described mathematical models for the mechanics of the violin. I maintain strong connections with my old college.

After completing my studies in Durham, I moved to the School of Mathematics in Bristol to work under the supervision of Professor Jonathan Robbins (currently Head of School) and Dr Tomasz Maciazek (currently Vice Chancellor’s Fellow). Our work focuses on the mathematical description of a class of particles called anyons which exist only in two-dimensional systems and their quantum behaviour on networks of nanowires. We have worked in collaboration with researchers at other institutions around the world. I have also assisted in the teaching of first year and third year modules.