

Mathematician

As a mathematician in quantum, you would most probably work within a university but could also work for a company. Your work will mostly be office based although it is possible that you could visit laboratories to meet with experimentalist colleagues.



What does the role involve?

- Use of specialist software and programming languages to perform mathematical functions
- Trying innovative methods to find solutions to mathematical problems
- Using mathematical techniques to model or analyse the performance of new technologies
- Presenting findings in written papers and in meetings
- Giving presentations at conferences
- Keeping up to date with advances in the field
- If based in academia, you would probably be required to undertake teaching and supervise students, along with carrying out some admin tasks



Where would I work?

Offices within campuses or company buildings.



What subjects should I do well in at school?

Mathematics, possibly Further Mathematics and Physics.



What qualifications do I need?

Minimum Bachelor's degree in mathematics, or a related field such as physics. Most mathematicians hold PhDs in mathematics or are working towards holding one.



What skills and attributes are required?

Problem solving, data manipulation and analysis, evaluation skills, coding/computer programming, inquisitiveness, attention to detail, critical thinking, communication skills (written and verbal), teamwork, self-motivation, ability to work independently, creativity, flexibility.



What work experience would be helpful?

Experience working on research projects would be helpful, this could be part of a degree e.g. in a dissertation. Experience working with different computer programming languages.



What about career progression?

If you work in an academic setting, once you obtain a PhD you are likely to hold a number of postdoctoral positions working on different projects before obtaining a permanent role as a lecturer and potentially professor. In industry, there is the potential to move into more specialist roles within a company or move into managerial roles overseeing other mathematicians across a range of projects.

CASE STUDY



Roger Colbeck

Having studied Physics, Chemistry, Maths and Further Maths at A Level, followed by an undergraduate degree in Natural Sciences at the University of Cambridge, Professor Roger Colbeck embarked upon a PhD in mathematics, also at Cambridge, which was the start of his career in quantum. Roger held several postdoctoral positions before joining the University of York as a lecturer and then professor of mathematics, working on a variety of projects including on Quantum Cryptography and Quantum Random Number Generators. Find out more about Roger's journey at tinyurl.com/careersinquantum



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