



# WHY IT MATTERS... PHYSICS



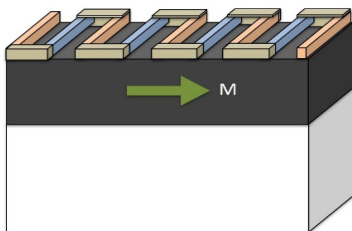
# Loughborough University

## Dr Kelly Morrison

### Senior Lecturer in Physics

Because I like to focus on applied physics, there are several aspects of my research that could be used in the real world.

For example, some aspects aim to reduce energy demand, others to develop new technology such as spintronics, which could underpin future computing technology.



**Thermopile:** Sketch of a potential device for harvesting waste heat, comprised of a magnetic layer (black) and a selection of thermopiles (green /blue / orange) on a substrate such as glass (white).

<p><b>Post 16 Education</b></p> <p>A Levels Physics, Maths, Biology &amp; Chemistry</p>	<p><b>Higher Education</b></p> <p>BSc Physics with Year in Europe</p> <p>PhD in Physics</p>
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“Physics can be described as all the scientific content not covered by biology or chemistry. It’s how the world works.. It’s everything you might need to know, to understand how your phone works (from GPS to memory, touchscreen displays).”

### Why did you want to study Physics?

I didn’t really know I wanted to pursue Physics until I started University. I was always interested in Mathematics but wanted to do something that was more applied. I was lucky enough to go on a taster course that gave an idea of what might be involved in Chemical Engineering, Mechanical Engineering, and Physics degrees. In the end, I spent a lot of time reading different popular science books and was swayed by the superconductor experiment I had the opportunity to try out during the taster course.

Why I continued to study Physics boils down to 2 things: firstly I’m a problem solver - I love the challenge of trying to figure out how something works, and how I might be able to use it in a productive way. Secondly there is always something new over the horizon... As a subject, you really do not get a good idea of what it can involve during GCSEs and A Level.





### Kelly's experience as a student

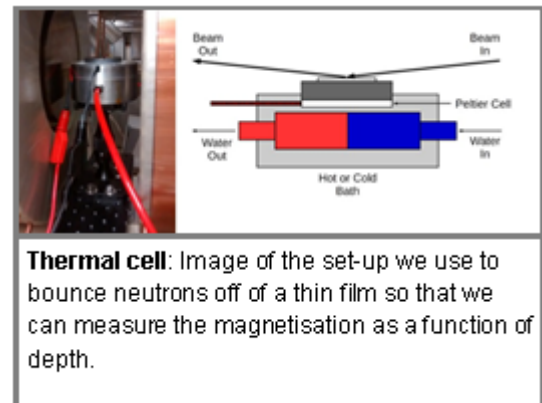
It was very different from A Level as there was a lot more freedom, but also incredibly intensive study into several different subjects. There was a period of catching up in the first semester as Further Maths was not an option where I was doing my A Levels, but this quickly evened out.

I would argue that my favourite part of the course (and potentially why I continued studying physics) was the final year project. This was due to the freedom and time I was given to study a particular research problem, where, unlike usual labs, there was no ready answer.

### Kelly's Career

I'm a Senior Lecturer and Research Fellow in the Department of Physics. Practically, what this means is that I spend a lot of my time in the laboratory, trying to figure out how things work.

More narrowly, my research focus is on superconductors, magnets and ways to use these materials to reduce energy demand (including magnetic refrigeration and harvesting waste heat).



**Thermal cell:** Image of the set-up we use to bounce neutrons off of a thin film so that we can measure the magnetisation as a function of depth.

**Kelly's advice:** Explore all your options. Whether this means reading different popular science books, delving into all of the STEM based content available on YouTube, or bending the ear of a Lecturer at an open day. There are more subjects out there than you will be aware of at A Level and it's worth looking around for one that suits you.

### Loughborough University offers BSc and MPhys degrees in

Physics / Engineering Physics / Mathematics and Physics / Physics with Computing / Physics with Theoretical Physics

**Please note:** Degrees and their titles change over time. Some graduates may have studied degrees that have evolved and changed in response to changes in demand from employers.