

Star Wars: What would hyperspace travel really look like?

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What University of Leicester physics students suggest hyperspace travel would really look like. Credit: University of Leicester

The sight of the Millennium Falcon making the "jump to lightspeed" is one of the most iconic images from the Star Wars trilogy.

But University of Leicester [students](#) have calculated that – in reality – Han, Luke and Leia would not see the light from stars stretching past the

ship as we are shown in the movies.

The group of fourth year MPhys students published the findings in this year's University of Leicester's *Journal of Physics Special Topics*. The journal is published every year, and features original short papers written by students in the final year of their four-year Master of Physics degree.

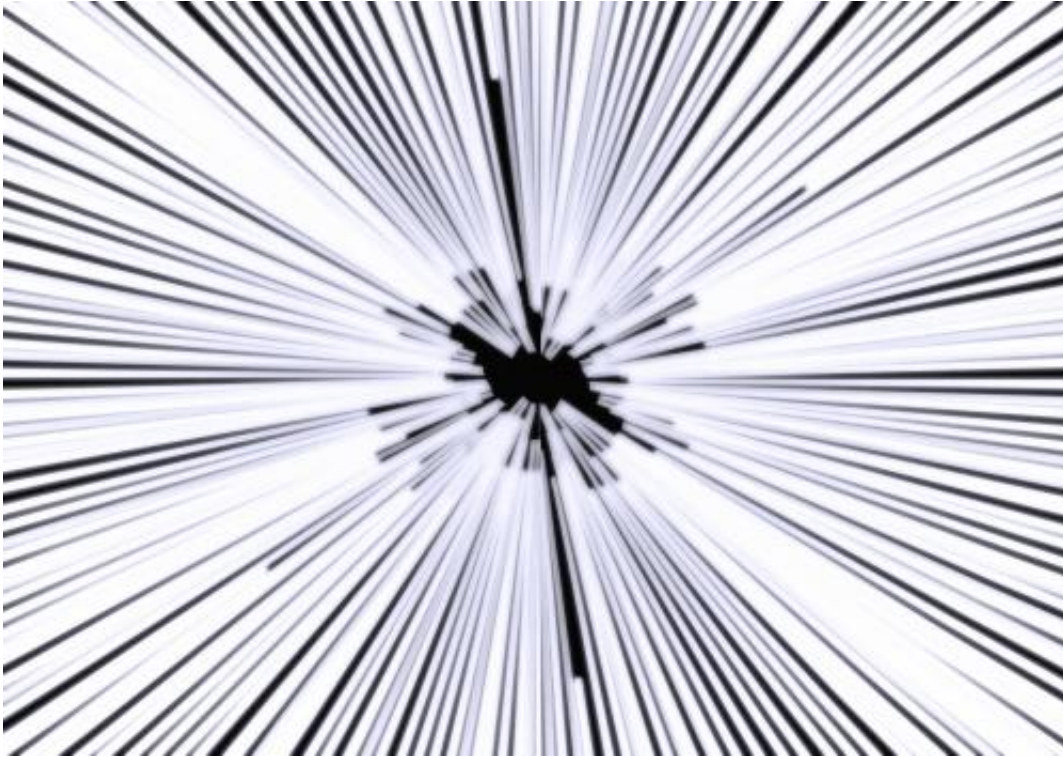
The students are encouraged to be imaginative with their topics, and the aim is for them to learn about aspects of publishing and peer review.

In the films, spacecraft are equipped with hyperdrives which allow them to approach the [speed of light](#).

As the hyperdrive is engaged, every star in the sky is seen to stretch before the characters' eyes as the ship speeds through the galaxy.

The four students - Riley Connors, Katie Dexter, Joshua Argyle, and Cameron Scoular – have shown that this would not be the case.

They have shown that the crew would actually see a central disc of bright light.



An example of how the the films suggest hyperspace travel would look like.
Credit: University of Leicester

There would be no sign of stars because of the [Doppler effect](#) - the same effect which causes the siren of an ambulance to become higher in pitch as it comes towards you.

Doppler blue shift is a phenomenon caused by a source of [electromagnetic radiation](#) – including visible light - moving towards an observer.

The effect means that the wavelength of electromagnetic radiation will be shortened.

From the Millennium Falcon crew's point of view, the wavelength of the light from stars will decrease and 'shift' out of the visible spectrum into

the X-ray range.

They would simply see a central disc of bright light as [Cosmic Microwave Background](#) Radiation is shifted into the [visible spectrum](#).

Cosmic [Microwave Background Radiation](#) is radiation left behind from the Big Bang, and is spread across the universe fairly uniformly.

The group found after further investigation that the intense X-rays from stars would push the ship back, causing it to slow down. The pressure felt by the ship would be comparable to that felt at the bottom of the Pacific Ocean.

Their calculations also show that Han would need to store extra amounts of energy on his ship to overcome this pressure in order to continue on his journeys.

Riley Connors, 21, from Milton Keynes, said: "If the Millennium Falcon existed and really could travel that fast, sunglasses would certainly be advisable. On top of this, the ship would need something to protect the crew from harmful X-ray radiation."

Joshua Argyle, 22, from Leicester, added: "The resultant effects we worked out were based on Einstein's theory of Special Relativity, so while we may not be used to them in our daily lives, Han Solo and his crew should certainly understand its implications."

Katie Dexter, 21, from Kettering, concluded: "Perhaps Disney should take the physical implications of such high speed travel into account in their forthcoming films."

Course leader Dr Mervyn Roy, a lecturer at the University's Department of Physics and Astronomy, said: "A lot of the papers published in the

Journal are on subjects that are amusing, topical, or a bit off-the-wall. Our fourth years are nothing if not creative! But, to be a research physicist - in industry or academia - you need to show some imagination, to think outside the box, and this is certainly something that the module allows our students to practice.

"Most of our masters students hope to go on to careers in research where a lot of their time will be taken up with scientific publishing - writing and submitting papers, and writing and responding to referee reports.

"This is another area where the module really helps. Because Physics Special Topics is run exactly like a professional journal, the students get the chance to develop all the skills they will need when dealing with high profile journals later on in life."

More information: Full papers: physics.le.ac.uk/journals/index/article/view/549/360 , physics.le.ac.uk/journals/index/article/view/575/386

Provided by University of Leicester

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