

# Science Focus

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## SOMETHING IS WRONG WITH OUR MODEL OF THE UNIVERSE...

...THE CLOSER WE LOOK, THE WEIRDER IT GETS



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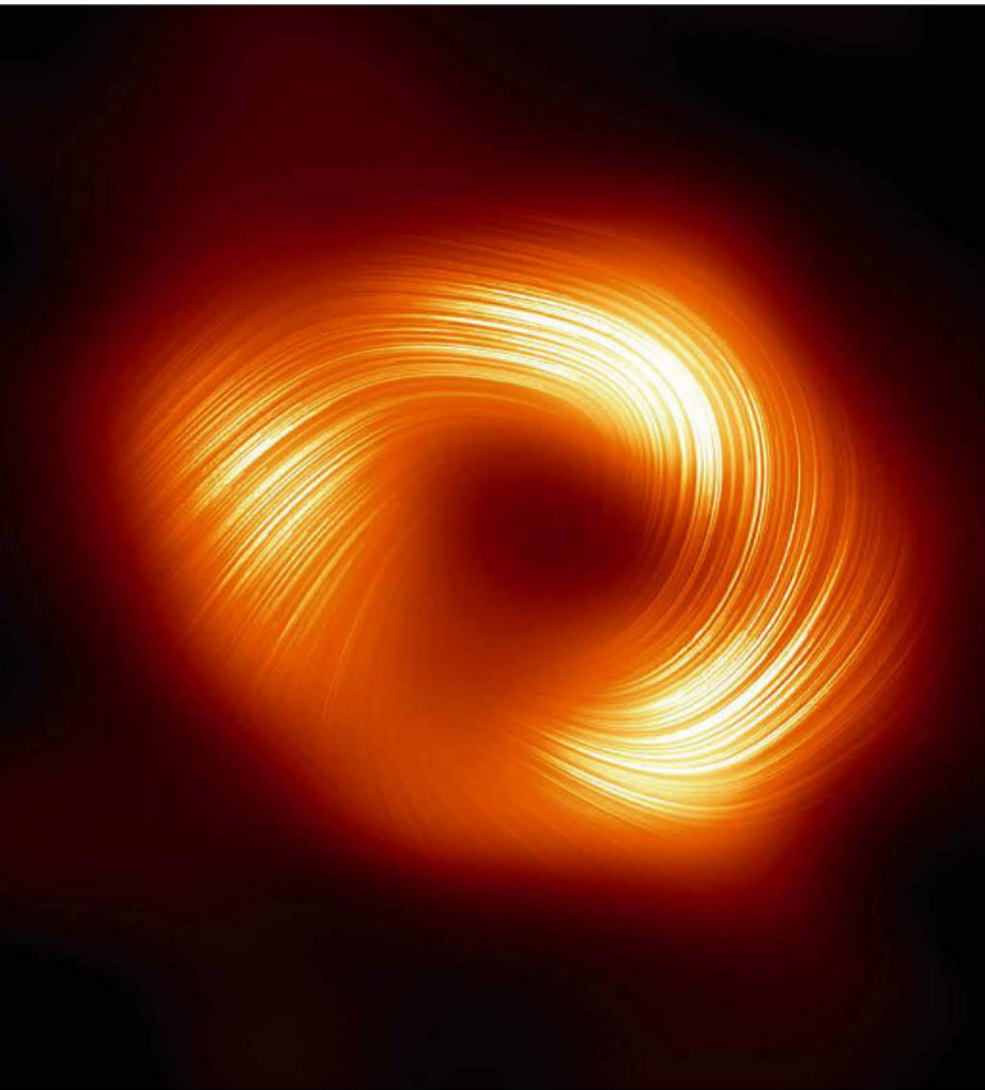
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SPACE

# NEW IMAGE OF THE BLACK HOLE AT THE CENTRE OF OUR GALAXY REVEALS ITS HIDDEN FEATURES

The stunning image of Sagittarius A\* confirms that black holes share characteristics



In polarised light, black holes Sgr A\* (left) and M87\* (above) exhibit similar magnetic field structures

the centre of the Messier 87 galaxy. M87\* is about 1,000 times more massive than Sgr A\*, so it rotates more slowly and is easier to image.

To the surprise of the team, despite the vastly different sizes between the two black holes, this new image shows that the structures of the magnetic fields are remarkably similar. This suggests that strong magnetic fields are fundamental features of all supermassive black holes, and could be critical to how they interact with the gas and matter around them. According to Issaoun, learning more about these interactions could help us learn more about the history of our galaxy.

It's been almost two years since the world first became acquainted with Sagittarius A\* (Sgr A\*), the supermassive black hole at the centre of the Milky Way. Now, new research published in the journal *The Astrophysical Journal Letters* has captured the first image of Sgr A\* in polarised light: light that only oscillates in one direction instead of randomly. The new image has revealed Sgr A\*'s otherwise hidden magnetic fields.

“This spiral pattern that we see swirling around the black hole indicates the magnetic fields must also be a spiral pattern whirling around – and that they're very strong and ordered,” Dr Sara Issaoun, co-lead of the research told *BBC Science Focus*.

Using eight telescopes, it took the researchers three years to overcome the challenges of imaging Sgr A\* in polarised light. This was far longer than it took them to image M87\*, the larger black hole at

**“This suggests strong magnetic fields are fundamental features of all supermassive black holes”**