

Evidence Found for Magnetic Monopoles

Geoff Brumfiel

Editor's Note: Does that mean we'll be able to create a Bussard Ramscoop one day?



([Nature](#) [1]) - One of those facts of life that physicists live with is that every magnet ever made has a north and a south pole. When researchers try to split the two, they simply get another magnet with poles of its own. There's no reason that should be the case, and for decades they have been on the hunt for a single pole, or monopole.

"People have been looking for monopoles in cosmic rays and particle accelerators — even Moon rocks," says Jonathan Morris, a researcher at the Helmholtz Centre for Materials and Energy in Berlin.

Now Morris and others have found the strongest evidence yet for magnetic monopoles, in small crystals about the size of an ear plug. When the crystals are chilled to near absolute zero, they seem to fill with tiny single points of north and south. The points are less than a nanometre apart, and cannot be measured directly. Nevertheless, Morris and other physicists believe they are there. They make their case in two papers published today in the journal *Science*^{1,2}, and other work published on the pre-print server arXiv.org^{3,4}.

The crystals are made of materials known as 'spin ice', because their atoms are arranged in a way similar to those in water ice. Specifically, its atoms sit at the vertices of four-sided pyramids. Each atom behaves like a tiny bar magnet, and when the crystal is cooled to near absolute zero, the atom-magnets align. Sometimes, three of the pyramid's four corners align together and create a region of north or south magnetic charge at the centre of the pyramid. The charge isn't attached to any physical object, but it behaves just as a monopole would.

[Click Here](#) [2] for the rest of the article.

Source URL (retrieved on 07/03/2015 - 9:41pm):

<http://www.ecnmag.com/news/2009/09/evidence-found-magnetic-monopoles>

Evidence Found for Magnetic Monopoles

Published on Electronic Component News (<http://www.ecnmag.com>)

Links:

[1] <http://www.nature.com/>

[2] <http://www.nature.com/news/2009/090903/full/news.2009.881.html>