Making sense of Howard Johnson's "Spintronics"

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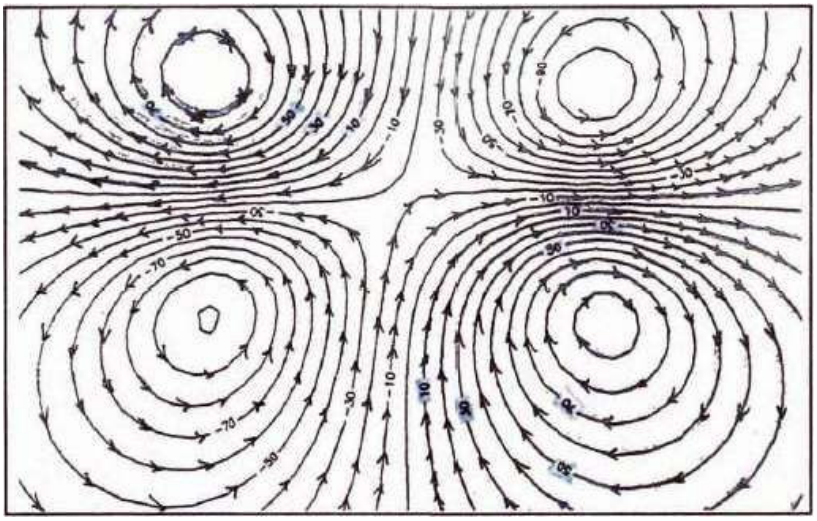
1. Introduction

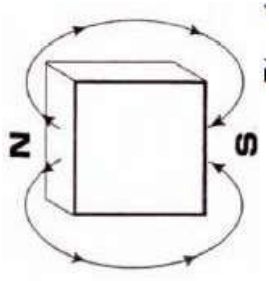
Many of you may have read Howard Johnson's "The Secret World of Magnets" published by Tom Bearden's Cheniere Press where Howard Johnson is claimed to be the father of spintronics. Unfortunately the word "spintronics" has a special meaning associated with schemes that make use of the spin of fundamental particles, in the main electrons. Johnson's vortices demonstrated in that publication, were they what he claims, might indeed be thus associated, but in this paper we show that his vortices are but a math artefact, they are not the magnetic field lines that he claims.

2. Examination of the evidence

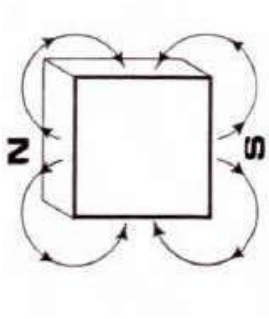
Lets look at the plot that first appears in this paper, and is repeated several times. For reasons that will become clear later we have rotated this and the following two images. This shows measurements taken on a rectangular magnet with N pole on the left and S pole on the right.



He uses this plot to claim that this illustrates the field lines from the rectangular magnet do not follow the classical form shown here



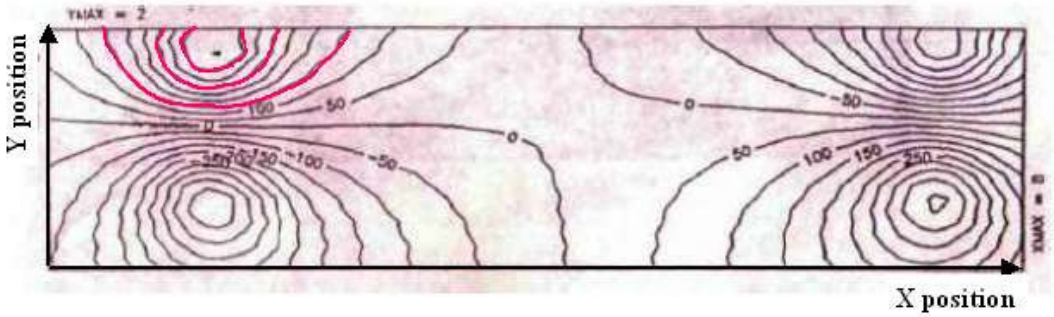
but instead they are of the form shown here.



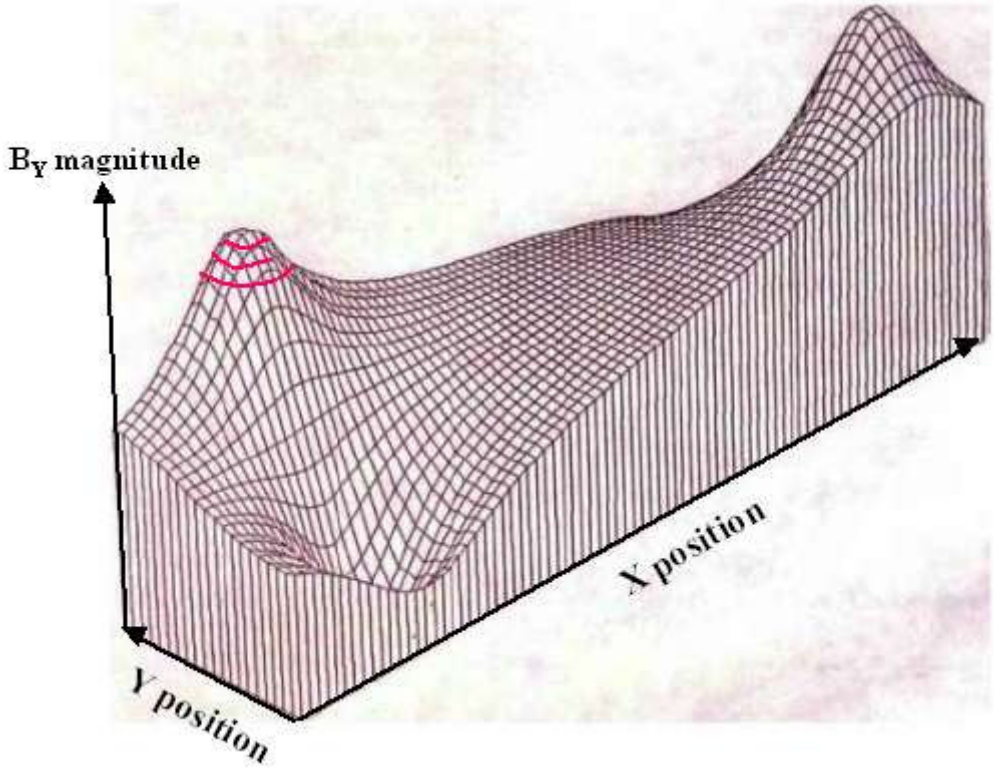
Now look again at his plot. Note that each line has a field intensity against it. Along each line the intensity remains constant at that value. ***Magnetic field lines do not obey that rule***. So if they are not classical field lines, what are they. The clue is found later in the document where he explains the measurements taken on a different magnet.

3. Analysis of the evidence

This next image is a plot of the Y component of the B field (B_Y) taken at a large number of points in the XY plane that sits adjacent to the magnet. The magnet is stated as 6 inches long lying parallel to the X axis, and from the plot we can estimate it to be about 1 inch wide. *The lines represent the locus of constant B_Y, they are not the field lines themselves*. We have chosen to highlight some of those lines in red. Note there are no arrows on these lines, unlike those in the earlier image for a shorter magnet.



Also shown in the document is a 3D visualization of those measurements. This is a plot of the magnitude of the B_Y component of field against the X and Y position of the measurement point, the measurements all being taken in the XY plane.

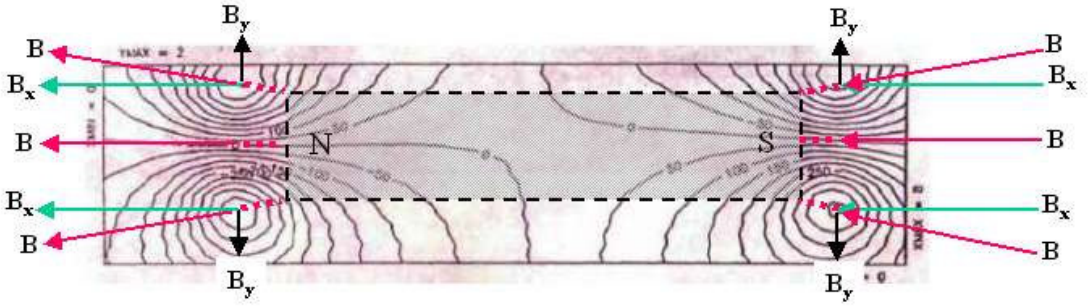


Also shown there are some red contour lines around the B_Y "hill" for comparison with the red contour lines in the previous image. Clearly they are contour lines, they are not field lines; they are lines of constant B_Y as are the red lines in the previous image. If we drew all the contours around those hills and troughs, then looked down on that surface

from above we would obtain that previous image, and that tells us exactly what that image is.

It is clear that the first image is a plot of the B_Y field taken taken in the XY plane above a smaller magnet. That first image has arrows on the contour lines that are purely arbitrary. Johnson has chosen to show all contours of positive B_Y flowing in one direction and those of negative B_Y flowing in the opposite direction. That's about as sensible as putting arrows on the height contour lines around a mountain where those lines above sea level flow in the opposite direction to adjacent ones that are below sea level.

Finally we have superimposed some arbitrary B_Y vectors (black) on the four peaks and troughs of the B_Y plot along with some B_X vectors (green). The resultant B field at those points are shown in red. A similar B_X vector where B_Y is zero yields the red B field there and these are the fields to be expected from a bar magnet below the measurement plane, depicted there by the grey shadow. You have to imagine those fields lines emanating from the magnet poles and rising upwards from below the paper (shown dotted). Note that those field directions point outward from the N pole on the left and inward to the S pole on the right. Johnson's claim otherwise is utter nonsense.



4. Conclusion

The message from this treatise is that Johnson's vortices depicted by his oscilloscope renderings are not what they seem. They are merely math artefacts created from his data sets that are wrongly claimed to be magnetic field lines.