REAL TIME VISUALIZATION OF MAGNETIC FIELDS FOR EDUCATIONAL APPLICATIONS

Mabel Agyakwaa Agyare, Materials Science and Engineering
School for Engineering of Matter, Transport and Energy

Research question/ Motivation

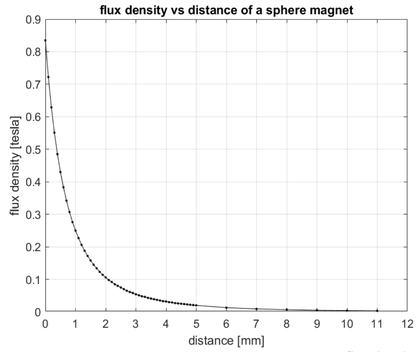
- Visualizing magnetic fields would be beneficial to students taking electromagnetism courses
- We developed educational modules for the recently developed SciHub magnetic field visualizer

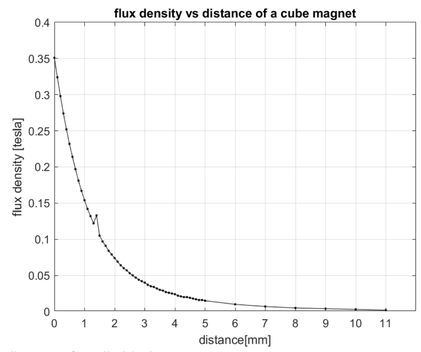
Approach

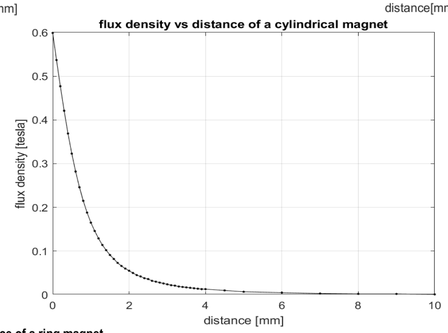
We developed laboratory exercises that allow the student to visualize the direction and magnitude of the magnetic field lines, and the magnetic field lines of experiments using wires, coils and ferromagnets of different shapes.

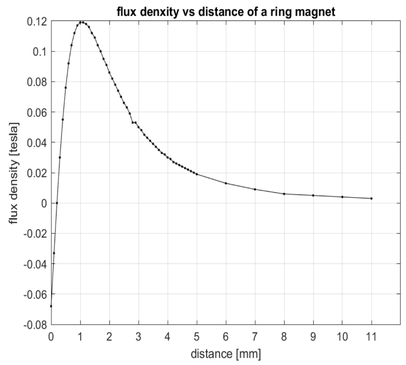
Results

The graphs show the flux density measured in Tesla against distance in mm.









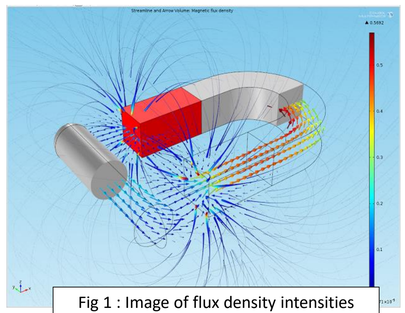


Fig 1 : Image of flux density intensities sourced from (*Magnet Magnetic Field (Page 1) - Line.17QQ.Com*, n.d.)

Challenges and Fallbacks

- Due to Covid-19 and travel restrictions, limited access to experimental work.

Acknowledgements

A special thanks to Dr. Nathan Newman for his much-needed guidance and time during the project duration.

Achievements

- Identified the magnets needed for further work.
- Related how distance affect magnet field for different types of magnet.
- Generated a plot of the flux density to distance which gives clear understanding on how the distance affect the field intensity.

Future works

Work on other configurations of magnets. Use SciHub's magnetic visualizer to measure the magnetic fields of for these cases and compare with the theoretically-derived ones.

References

- *Magnet Magnetic Field (Page 1)—Line.17QQ.com*. (n.d.). Retrieved April 9, 2021, from https://line.17qq.com/articles/whgfgmhsy.html

FURI

Ira A. Fulton Schools of Engineering
Arizona State University