Project plan
Simulations of magnetic dipoles on a spherical surface

1 Questions

- Should we code a graphical interface? *show interface*

- What will the theoretical component be exactly?

- Can we/I start the project now?

2 Initial steps (3-4 weeks)

- Get acquainted with existing code. (v.hard?)

- Acquaint Arjun with C++ code. (hard)

- Convert grains to magnets:

  - Change interactions. (medium)
  - Change shape from sphere to cylinder. (v.easy) ✓

- Draw cube. (medium) ✓

- Draw dodecahedron. (medium) ✓

- Add buttons. (hard):

  - A button allowing to type a number and select one of the magnets and then changing its attributes.
  - An external force H slider button.
  - A medium changer.
  - A plot button.

- Add interactivity. (almost impossible but instead) ✗:

  - Buttons and sliders.
  - UI elements such as time and Hamiltonian and correlation displayed as numbers.

- Enhance colours and textures of the graphics and GUI. (medium)

- Start working on the numerical schema. (v.hard)

- Draw flux lines (v.hard)

3   Reading literature (1-2 weeks)

- Wills, A. S., Ballou, R. and Lacroix, C. Phys. Rev. B 66, 144407, (2002).

- Bramwell, S. T. and Gingras, M. J. P. Science 294, 1495-1501, (2001).

- Ladak, S., Read, D. E., Perkins, G. K., Cohen, L. F. et al. Nature Physics 6, 359-363, (2010).

4   Experimenting with the schema and the configuration (1-2 weeks)

- Outputting data and analysing and plotting with Matlab:
  - Hamiltonian.
  - Flux.