

- 2.b. SoftSimpleReg.m is simulating the electric and magnetic fields caused by the propagation of a plane wave in a medium.
- 2.c.i. Commenting out the inclusion worked, it caused the wave to behave uniformly across the entire region.
- 2.c.ii. The bc structure is used to set the boundary conditions and source for the simulation.
- 2.c.iii. `bc{1}.s{1}` is setting up a single source object for the simulation. Editing associated parameters allows us to change the behaviour and location of the source.
- 2.c.iv. `bc{1}.xm/xp/ym/yp` are used to set the type of boundary condition for each of x minus (left), x plus (right), y minus (bottom), and y plus (top). For example, changing the boundary type from 'a' to 'e' changes the behaviour of the corresponding boundary to a reflective surface.

The file SoftSimpleReg.m has been edited to include vertical grating.

The file SoftSimpleReg\_Creative.m shows the behaviour of the wave around two concentric circles having a greater epsilon value than their surroundings. Furthermore, this simulation now accounts for two separate plane wave sources, located a distance of  $y = \frac{3}{4} * y_{\text{max}}$  apart from one another.