Finite element modelling
Lecture notes 9

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FEMM

- Free download – share ware
- Limited to 2D static problems
- Can solve problems of practical interest
- Contains many of the key features of large (and often very expensive) packages
- Details at:
- http://www.femm.info/wiki/HomePage
- Free download at:
- http://www.femm.info/wiki/Download

FEMM

- Copies installed on PCs in F-Floor computer suite (F137) – next to Lecture Theatre 12
- 'Lectures' for next 2 weeks will be held in F137
  - Demonstrator support
  - Bring your laptop along if you prefer
- Will use the on-line tutorials at:
- http://www.femm.info/Archives/doc/tutorial-electrostatic.pdf
- http://www.femm.info/Archives/doc/tutorial-magnetic.pdf
- Example sheet will be handed out
- Problem sheet for assessment will be handed out on 13/12/13
  - customised – all individual problems
- Due to submission 14/3/14
- Estimate 10 hours max to complete exercise

Basic steps

- Pre-processing
  - Define geometry
    - Key points
    - Connecting lines
    - Identify regions
  - Select materials
  - Set boundary conditions
  - Put in sources (could be current, charge density, permanent magnet)
- Solving
  - Might include choosing solver algorithm and tolerances
- Post-processing
  - Calculate quantities of interest
  - Plot profiles along path

Some useful sources

- Geometry of transmission towers
- http://www.emfs.info/Sources+of+EMFs/Overhead+power+lines/Calculating/geometries/
- Fields from typical power lines
- http://www.emfs.info/Sources+of+EMFs/Overhead+power+lines/specific/400+kV+overhead+electric.htm