THE MAGNETIC FIELD OF MOVING CHARGE

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3/24/2011

Supplementary Material for PHY1308 (General Physics - Electricity and Magnetism)

ANNOUNCEMENTS

- Homework 7:
  - Due Tuesday by 9:30am
- Next week
  - I am traveling for LHC-related work
  - Mr. Ferrante will cover the lectures and administer the Thursday quiz
  - Extra office hours tomorrow, 10-noon (Hughes-Trigg)

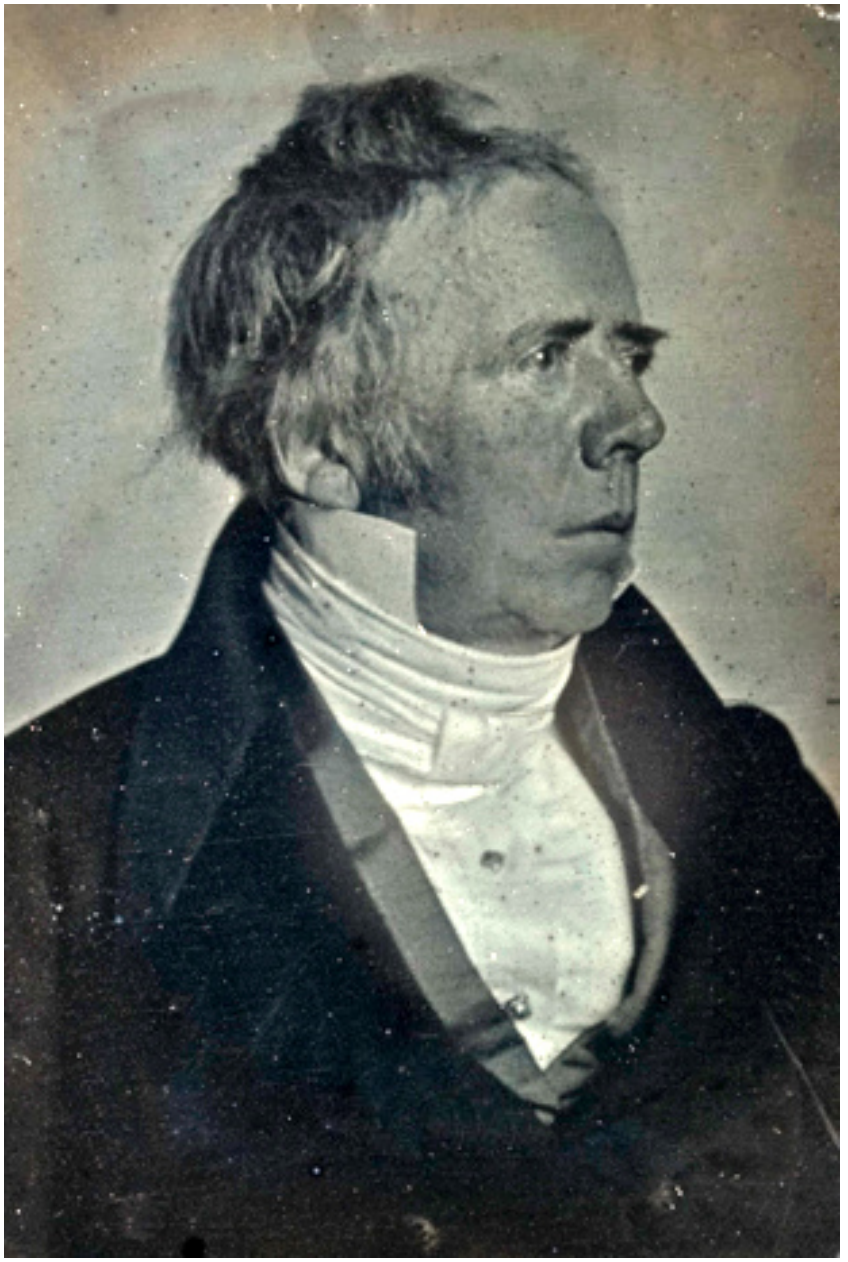
TERRESTRIAL MAGNETISM

Refrigerator magnets:
~100G (~0.01T)

Rare earth magnets:
~0.5-1.0T

So, the scale of terrestrial magnetism is about 1T.

HANS CHRISTIAN OERSTED

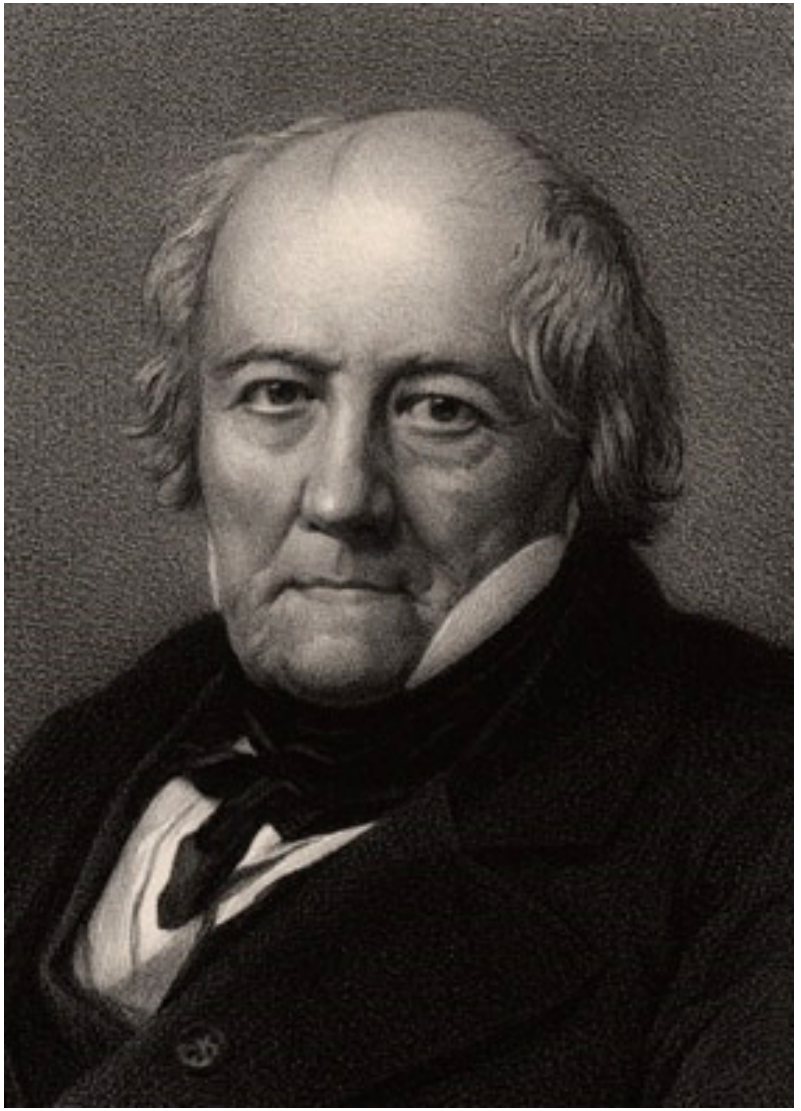


1777-1851

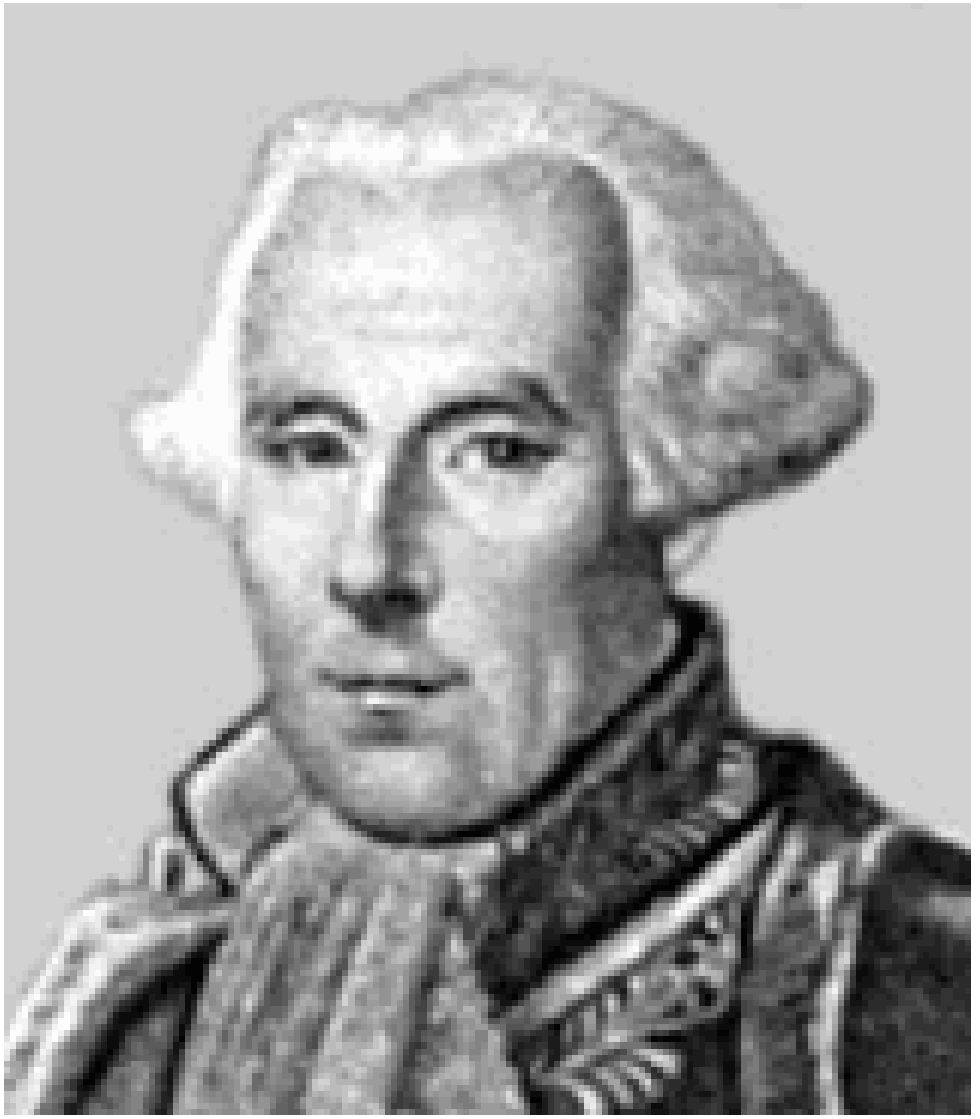
Danish physicist and chemist.

Observed in 1819 that an electric current caused a compass needle to deflect. This observation caused quite a stir. Electricity and magnetism were related phenomena.

BIOT AND SAVART

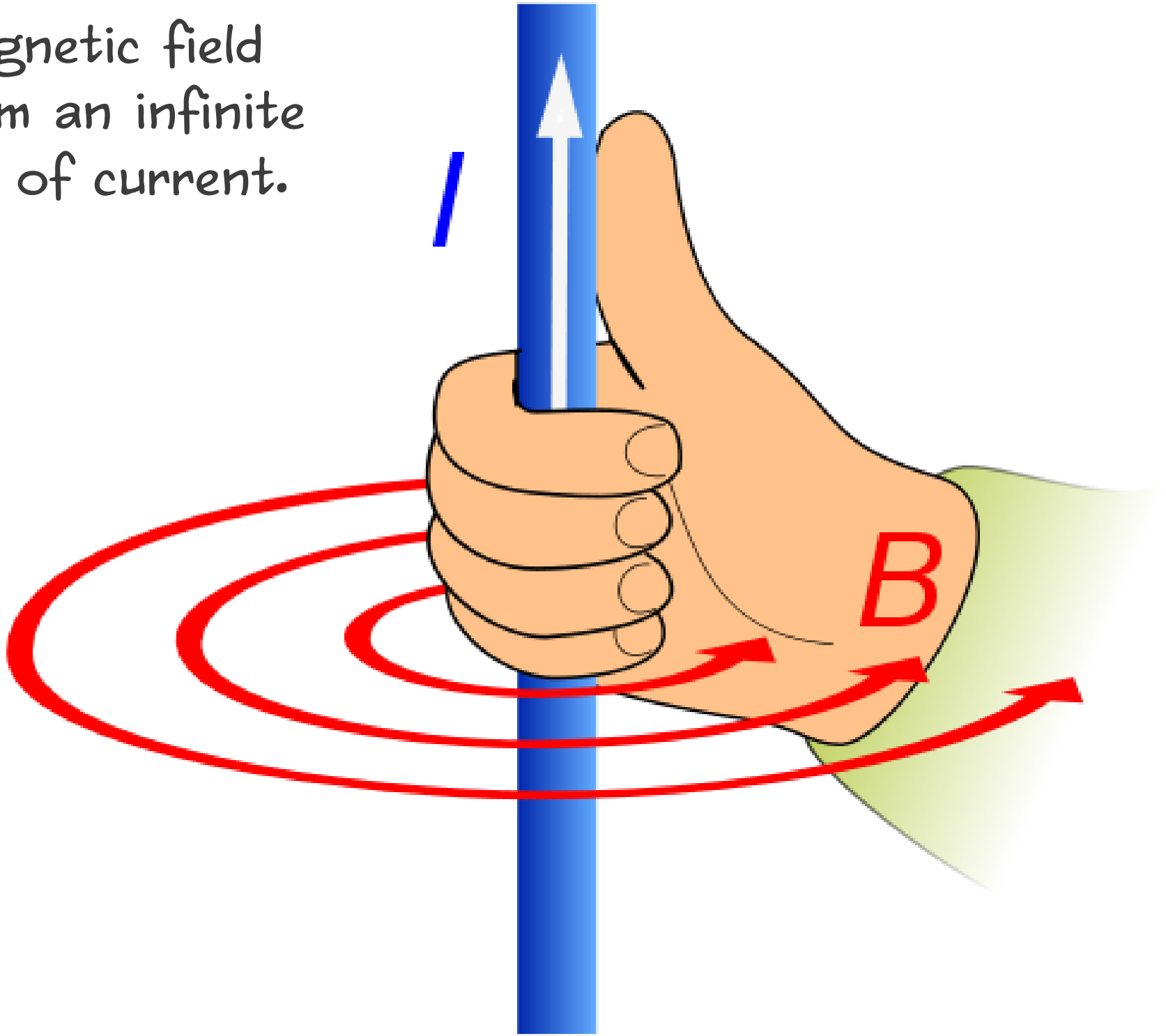


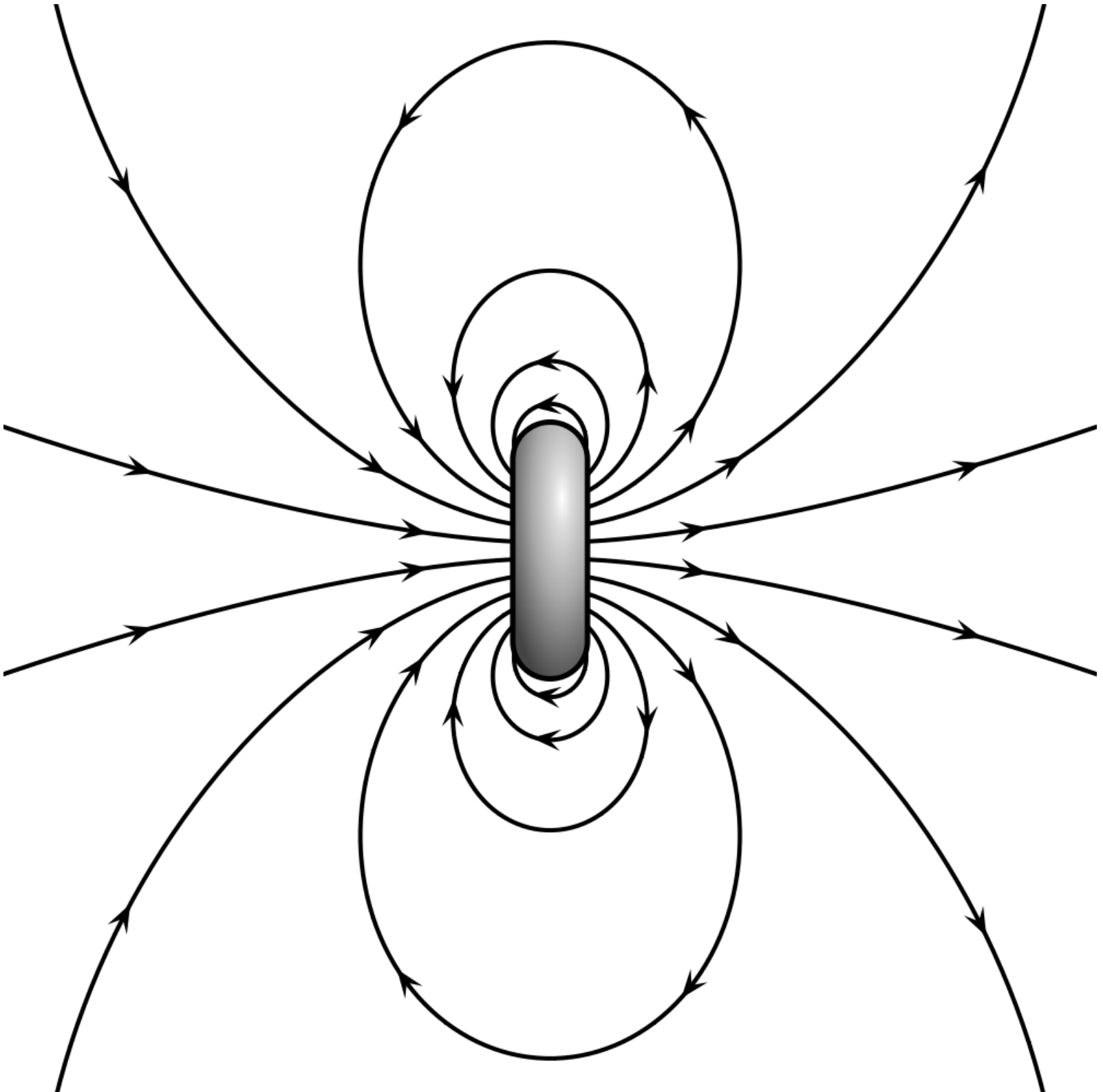
Jean-Baptiste Biot
1774-1862



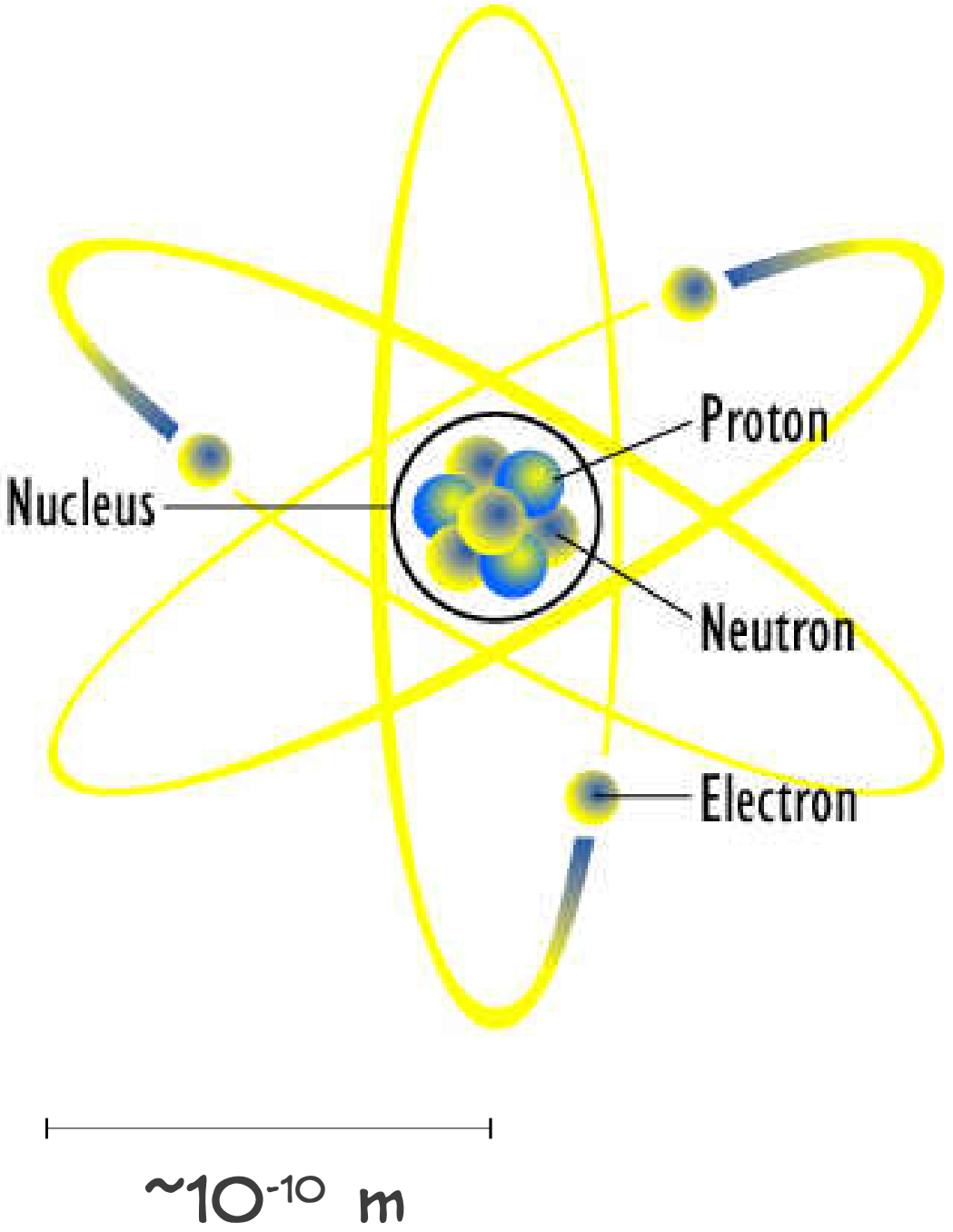
Felix Savart
1791-1841

Magnetic field from an infinite line of current.





Bohr Model of the Atom (not to scale!)



- Introduced in 1913.
- Very successful at explaining atomic properties.
- Replaced by full quantum mechanical model in 1920s.

Treat the atom like a "planetary system" - electrons in orbit around nucleus, maintained by electric force.