

THE ORIGIN OF MACROSCOPIC MAGNETISM

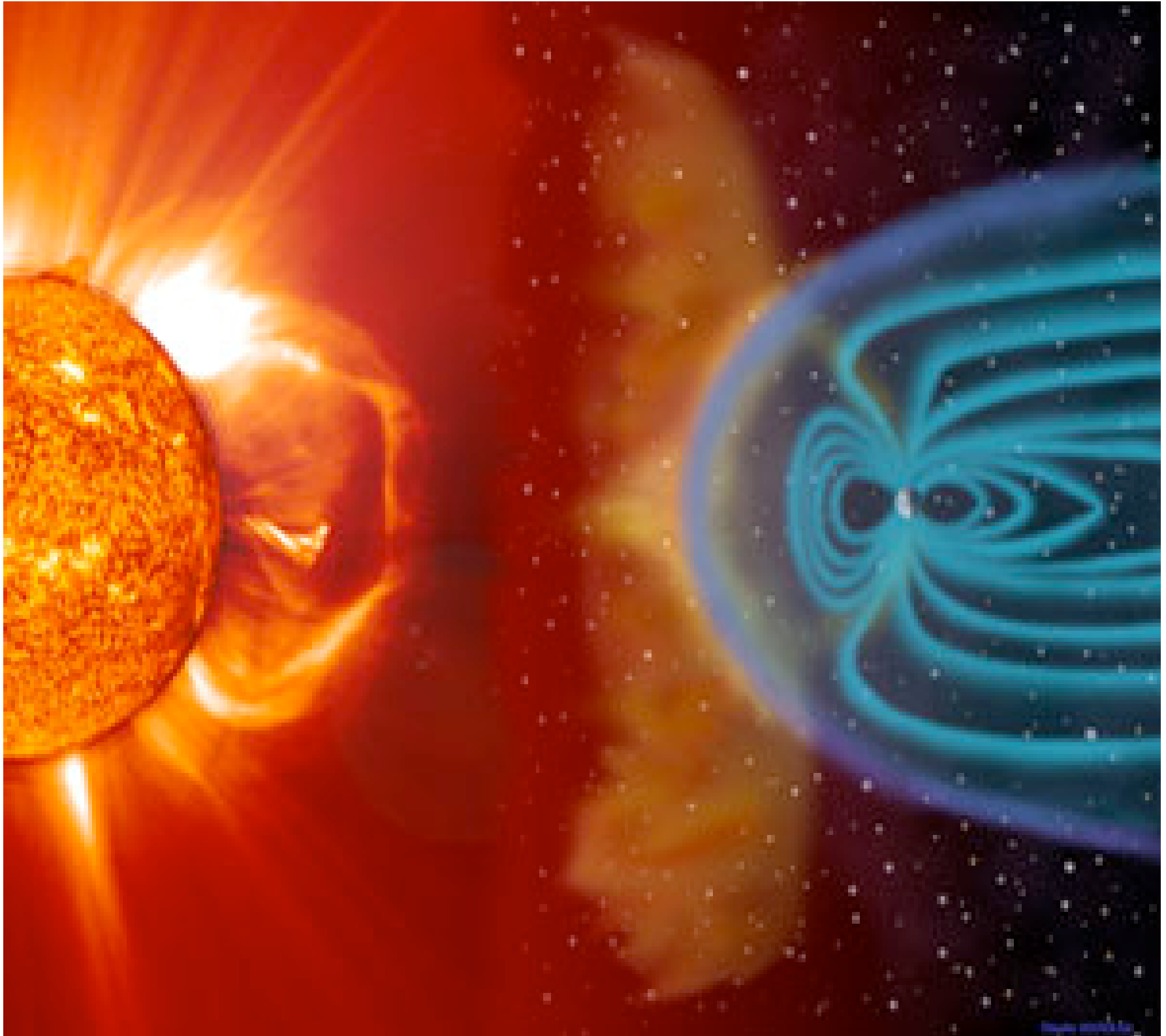
Prof. Stephen Sekula

10/25/2010

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

ANNOUNCEMENTS

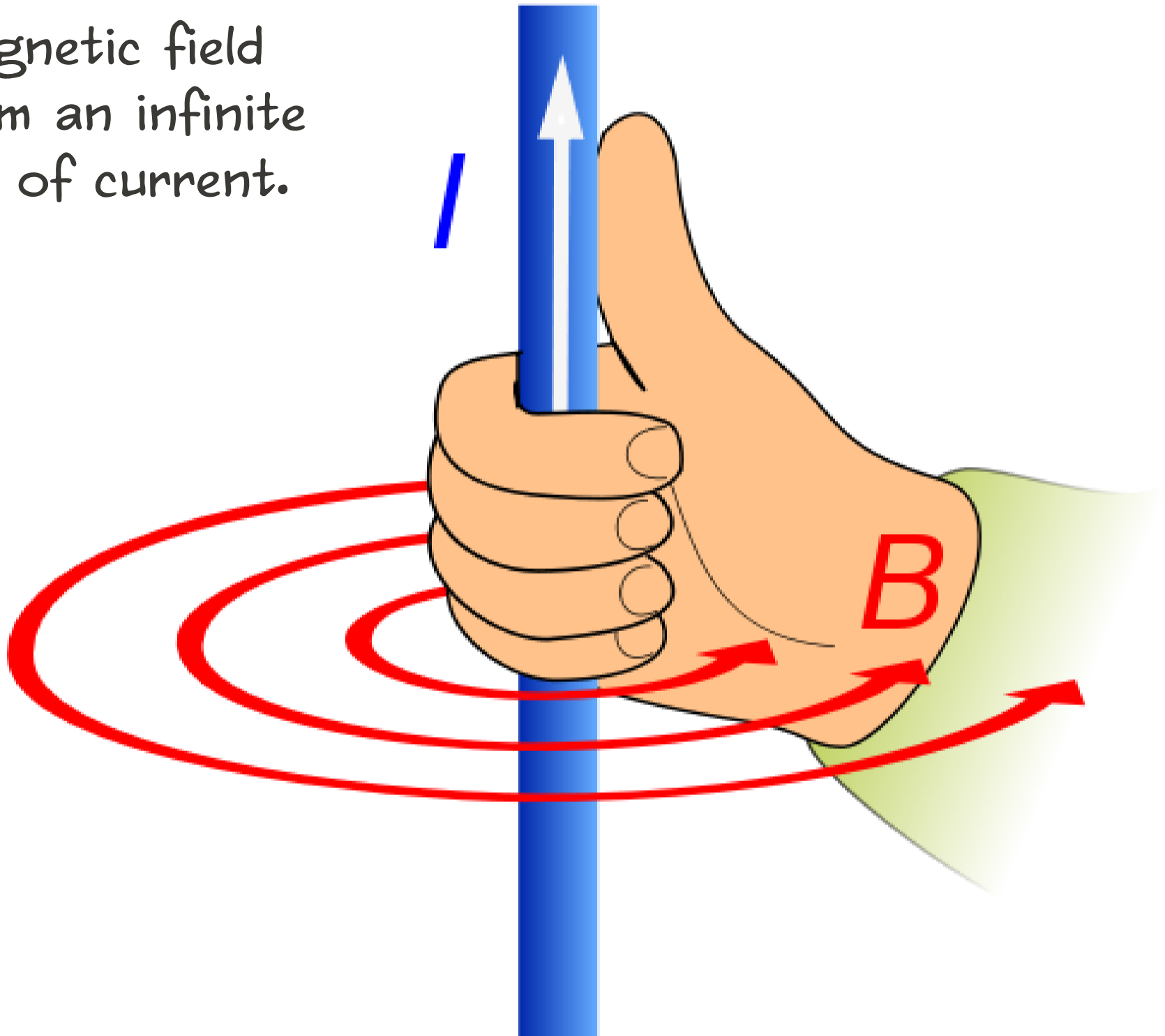
- Homework 8:
 - Due today at 5pm
 - Covers CH26.1-CH26.5
- Next Quiz
 - Friday.
 - Covers Homework 8.
- Special Guest!
 - Due to unavoidable travel, I won't be able to lecture on Wednesday
 - Please welcome your guest lecturer, Dr. David Joffe

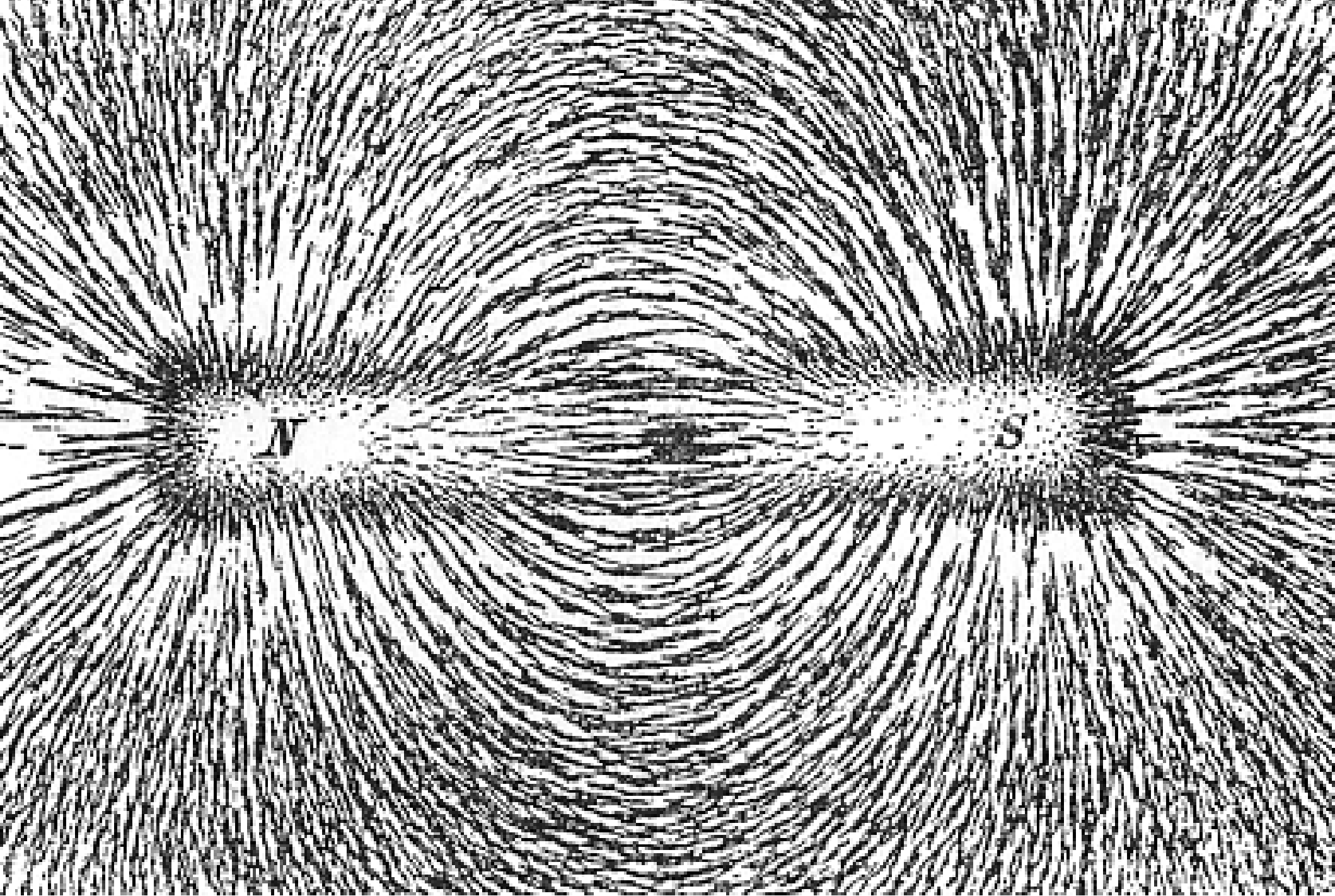






Magnetic field
from an infinite
line of current.





Iron particles exposed to a bar magnet.

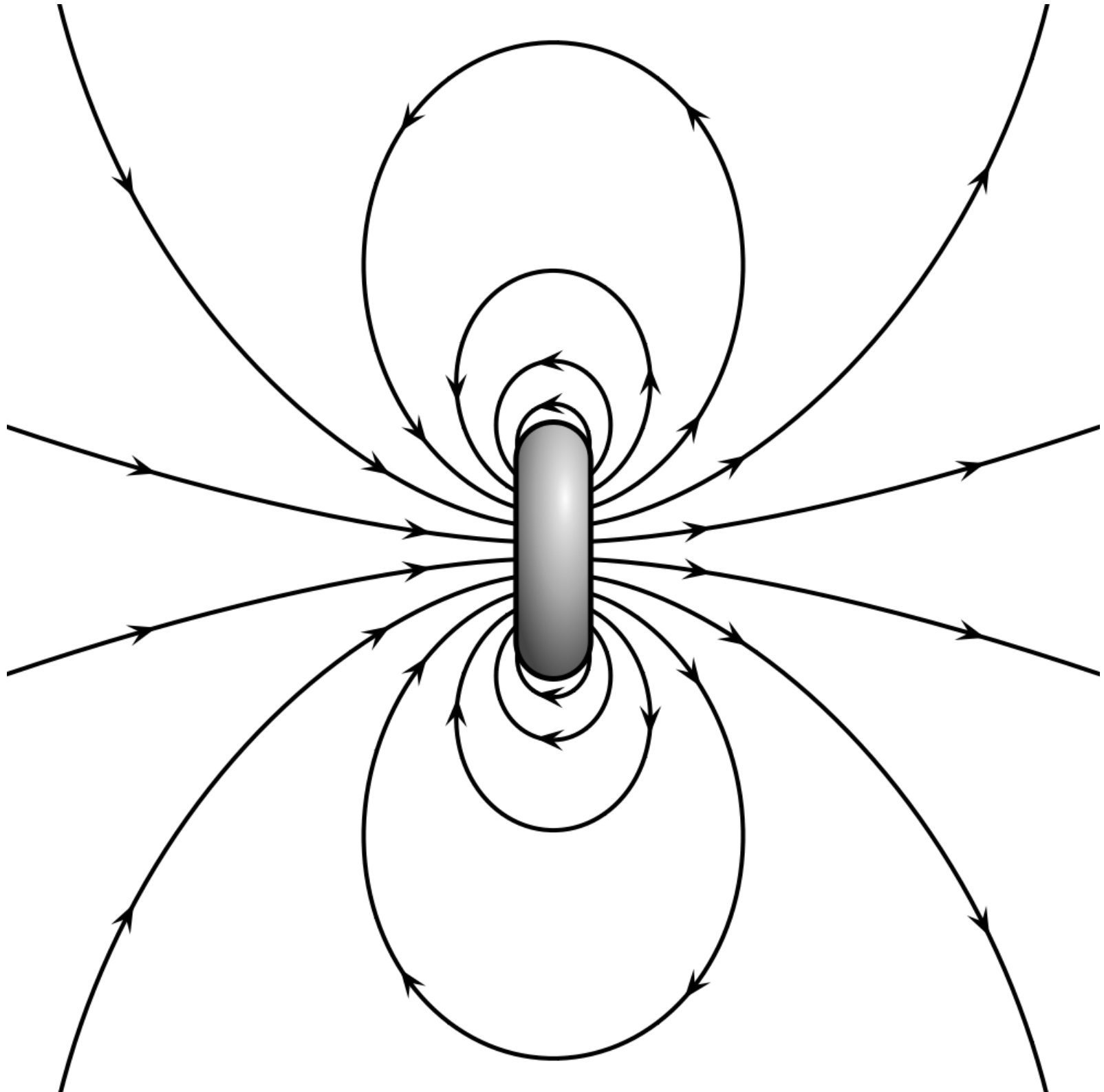
TERRESTRIAL MAGNETISM



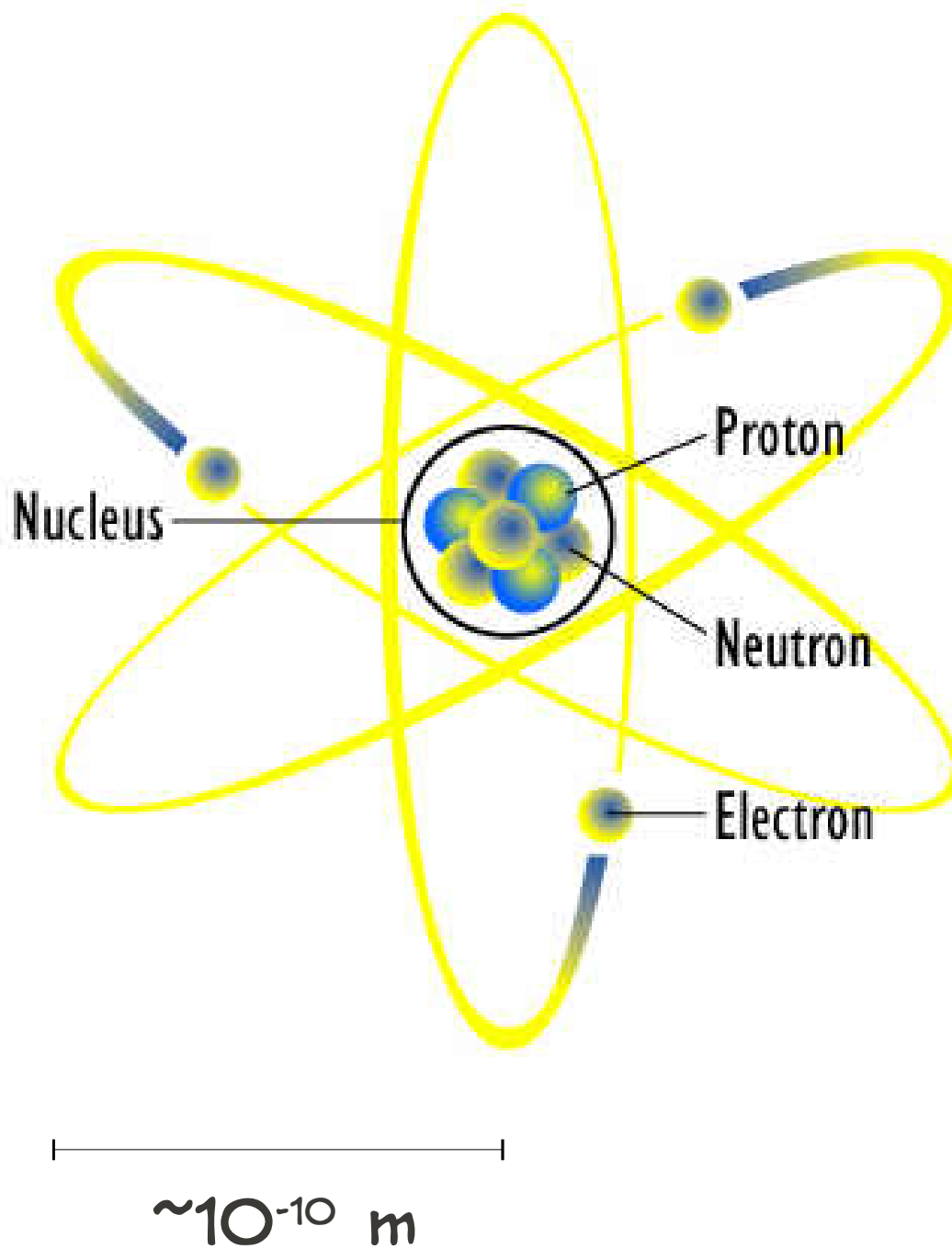
Refrigerator magnets:
~100G (~0.01T)

Rare earth magnets:
~0.5-1.0T

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



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.