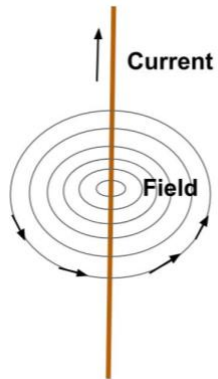
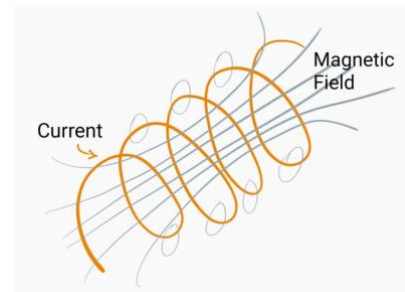


## Magnetism Quiz

- **Review:**
  - Gravity: inverse square law, depends on two bodies, has constant,  $f \sim (1)$ \_\_\_\_\_.
  - Electricity: inverse square law, depends on two *charges*, has constant,  $f \sim (2)$ \_\_\_\_\_.
- **Magnetic Force:** inverse square law, depends on two *magnetic poles*.
  - Separate from electricity until Oersted and (3)\_\_\_\_\_ saw relationship. [OERSTED 1820 IN CLASS]
- **Magnetic Fields**
  - Fields have lines that go from (4)\_\_\_\_\_ to (5)\_\_\_\_\_
  - Magnetic Fields are related to moving electric charges; still charges produce (6)\_\_\_\_\_.
  - Every atom therefore produces (7)\_\_\_\_\_.
- **Electromagnetic Fields**
  - Actually all electric or magnetic fields are (8)\_\_\_\_\_ fields.
  - Use right hand rule on either and you'll see that a spinning field of either causes the other.
  - This is how to form Electromagnets, (9)\_\_\_\_\_ (10)\_\_\_\_\_ (11)\_\_\_\_\_
  - In a Cyclotron, (12)\_\_\_\_\_ fields accelerate particles that are steered into spirals by (13)\_\_\_\_\_ fields.



If the current is straight – the magnetic field is circular straight



If the current is circular – the inner magnetic field is

- **Earth's Magnetic Field**
  - We think formed by molten, moving iron from (14)\_\_\_\_\_ currents causing electric current.
- **Cosmic Rays**
  - Protons, other atomic nuclei (mostly from (15)\_\_\_\_\_) – at mid-latitudes about 5 particles/cm<sup>2</sup> minute.
  - Magnetic field catches most in Van Allen belts; they fluoresce as Aurora Borealis and Australis.
- **Biomagnetic Fields**
  - We increasingly are learning that we have a sense of (16)\_\_\_\_\_ fields – don't know uses, yet.