

Electric Motor



The Motor Effect

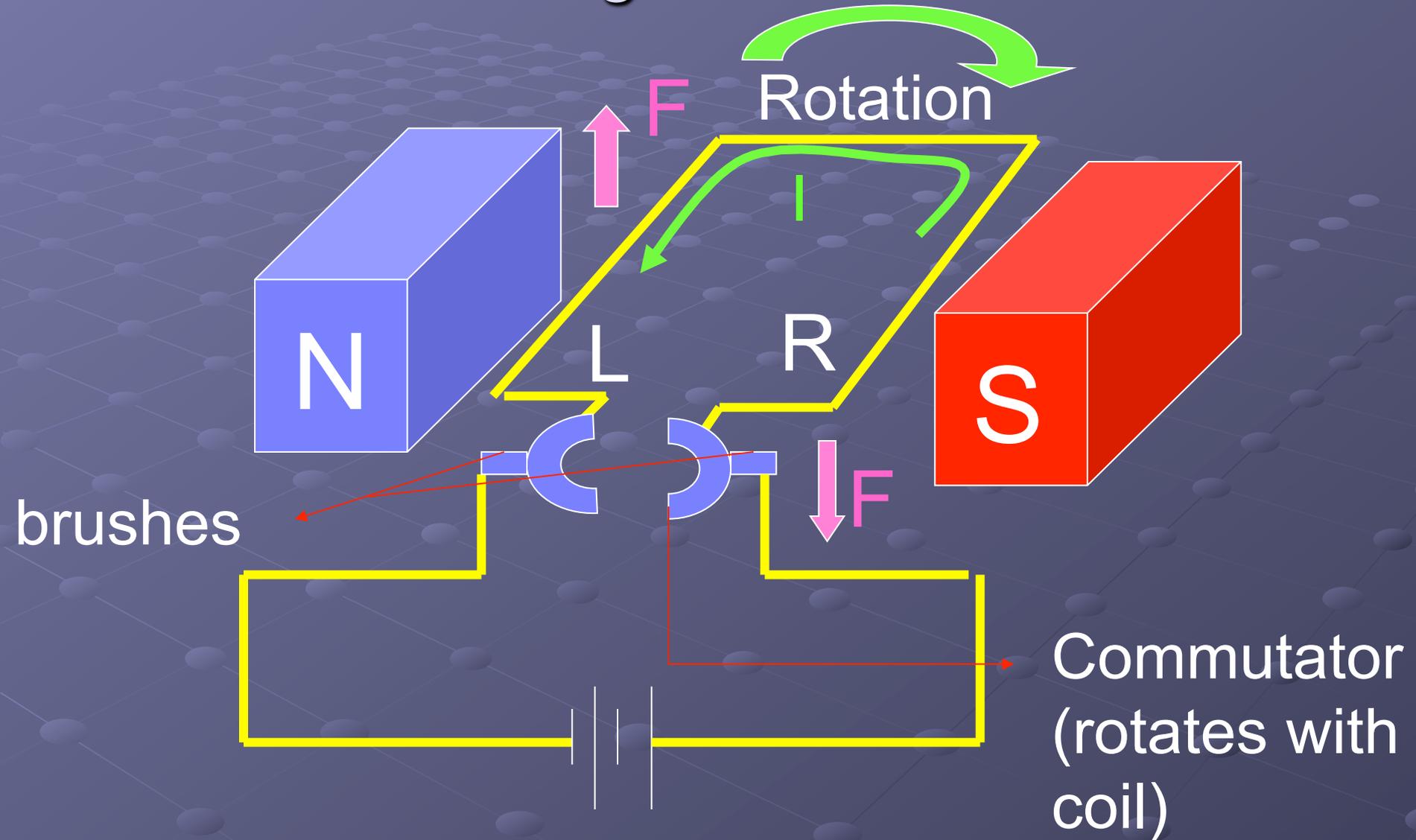
When two magnets come together they will attract or repel

When a wire is placed in the field of a permanent magnet there are now two magnetic fields. The magnet and the wire

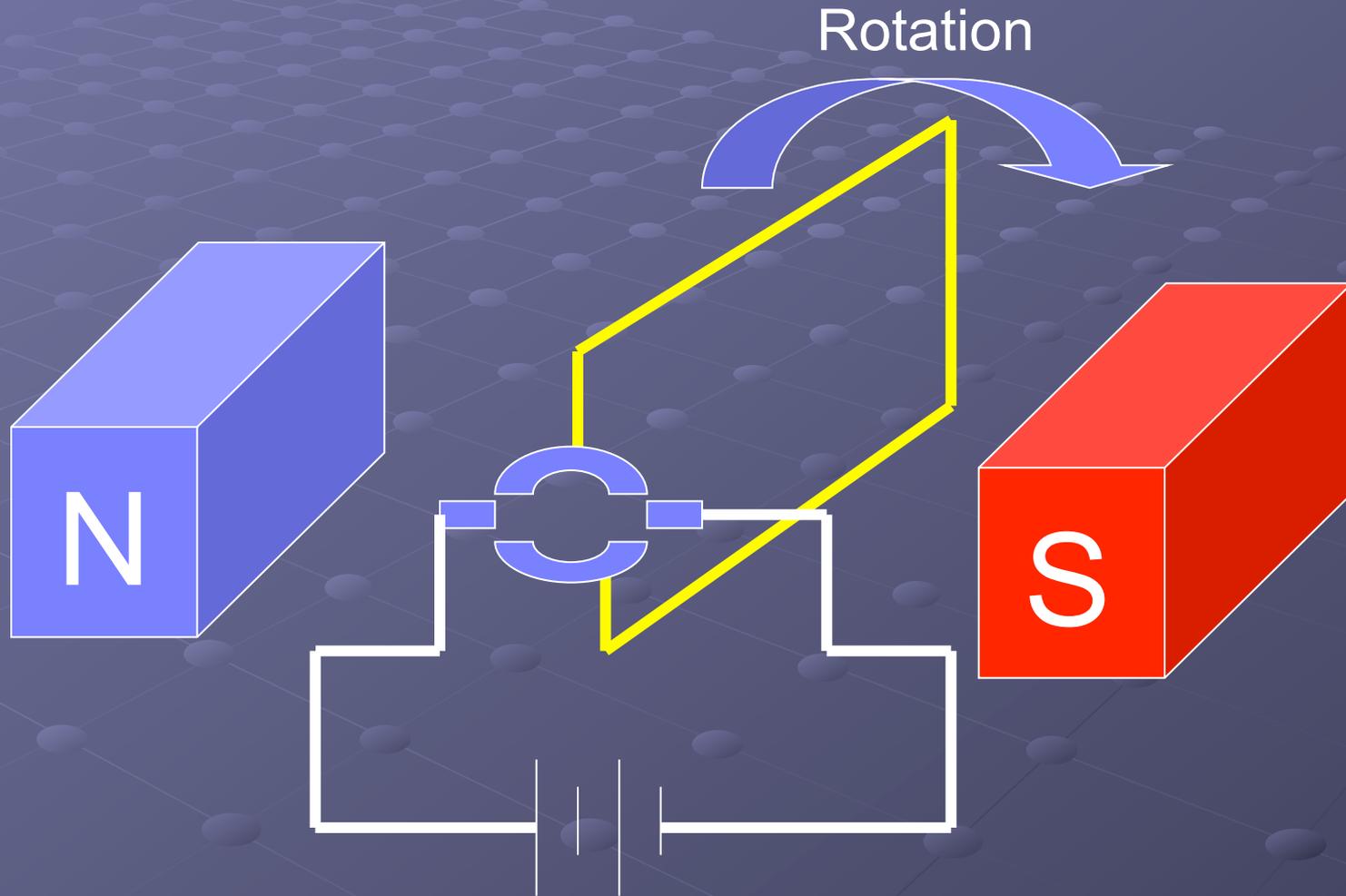
The force on a current-carrying conductor in a magnetic field:

- These two magnetic fields will either attract or repel each other

Motion of a current-carrying loop in a magnetic field



Vertical position of the loop:

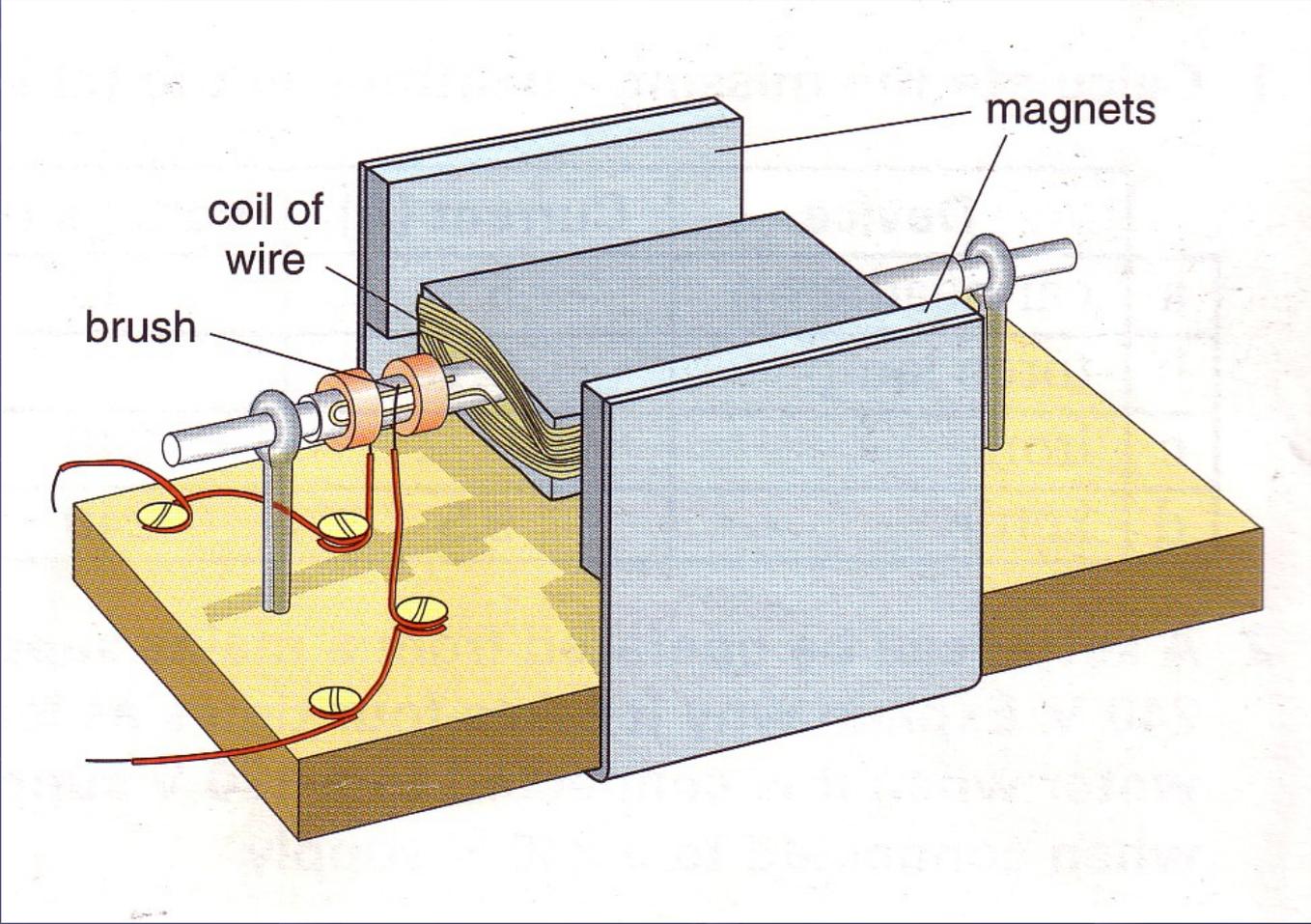


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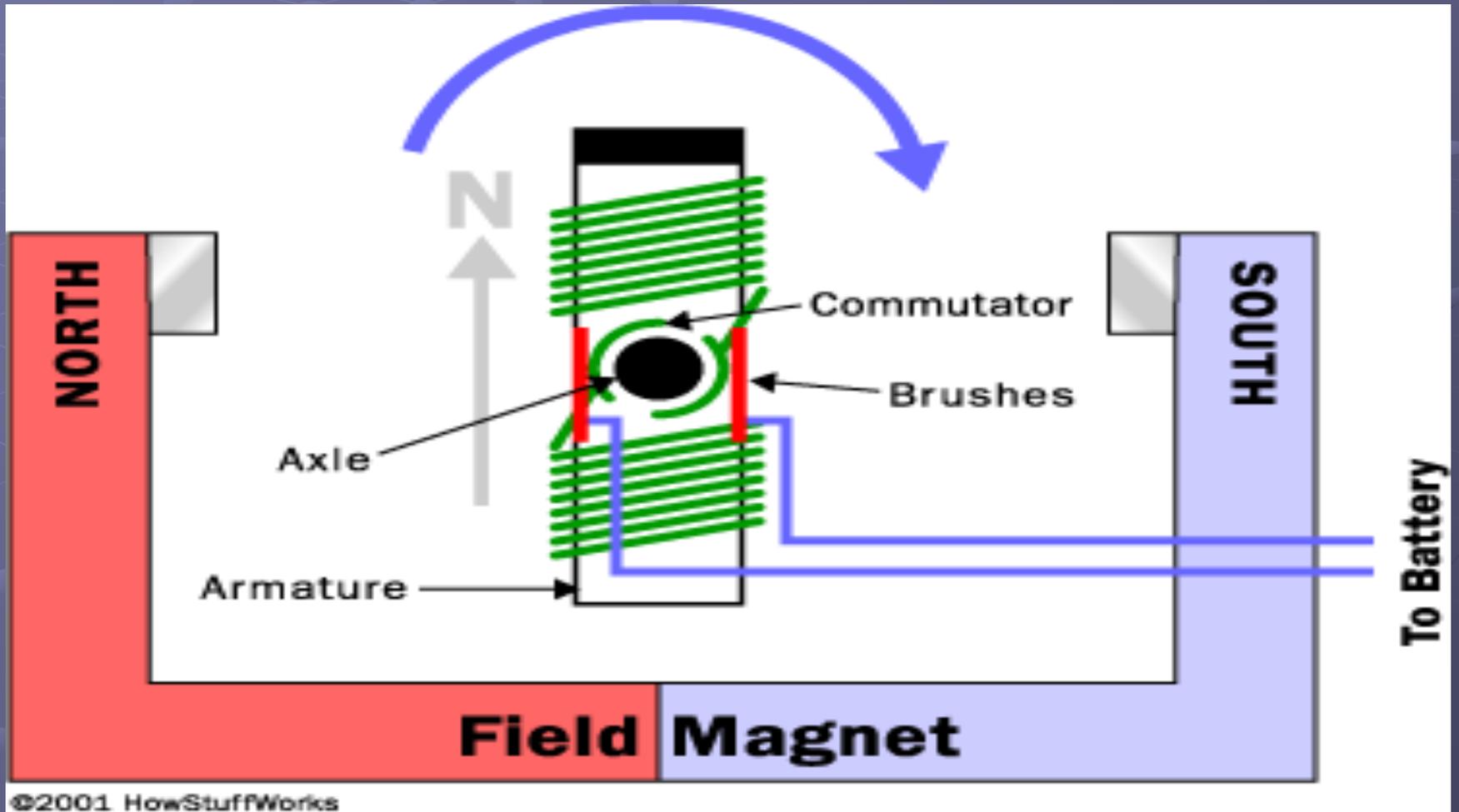
- An electromagnet is the basis of an electric motor
- An electric motor is all about magnets and magnetism: A motor uses **magnets** to create motion.
- Opposites attract and likes repel. Inside an electric motor, these attracting and repelling forces create **rotational motion**.
- A motor is consist of two magnets.

Parts of the Motor

- **Armature or rotor**
- **Commutator**
- **Brushes**
- **Axle**
- **Field magnet**
- **DC power supply of some sort**

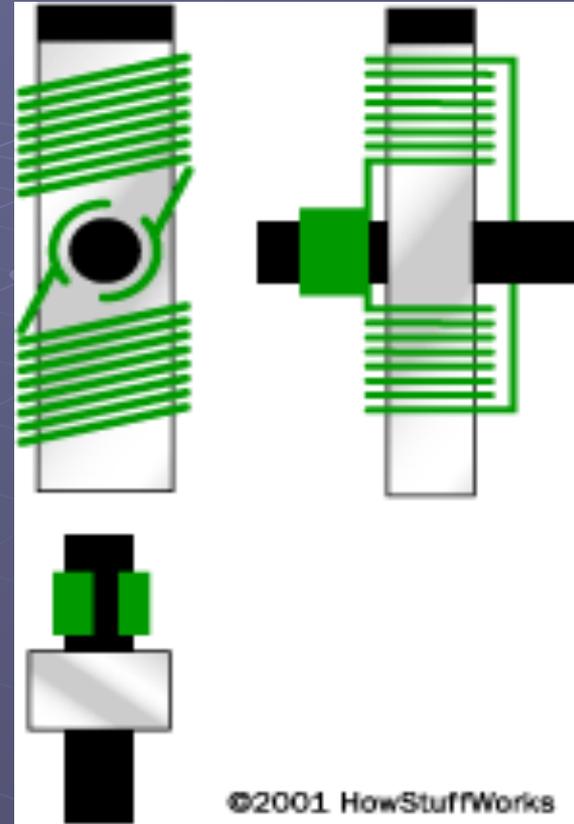


Motor Illustration



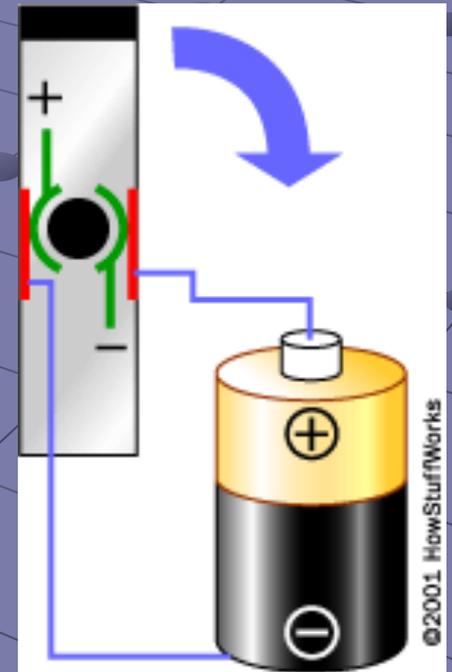
Armature

- The armature is an electromagnet made by coiling thin wire around two or more poles of a metal core.
- To keep it spinning, you have to change the poles of the electromagnet.



Commutator

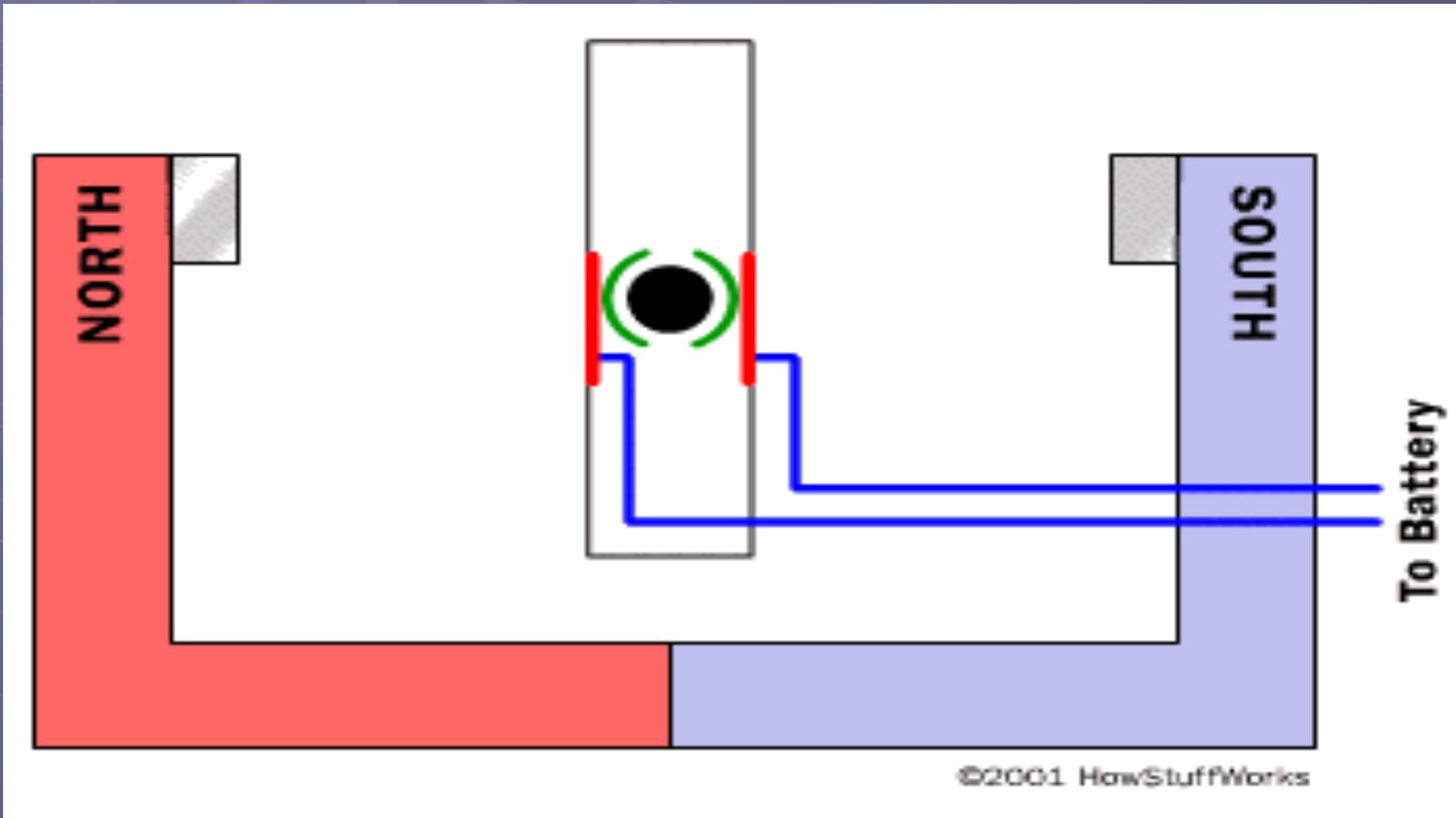
- Commutator is simply a pair of plates attached to the axle. These plates provide the two connections for the coil of the electromagnet.

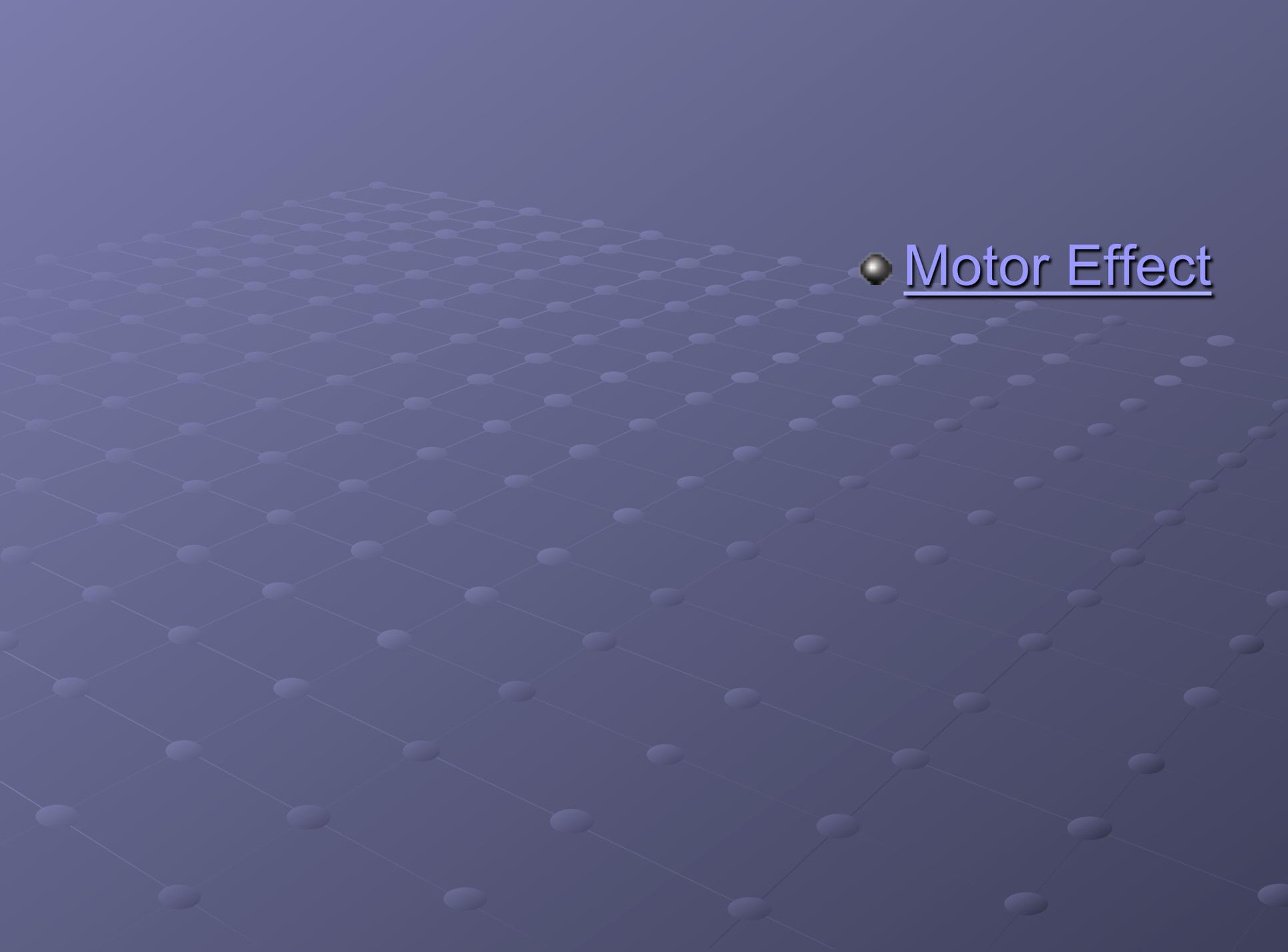


Brushes

- Brushes work together to let current flow to the electromagnet, and also to flip the direction that the electrons are flowing at just the right moment.

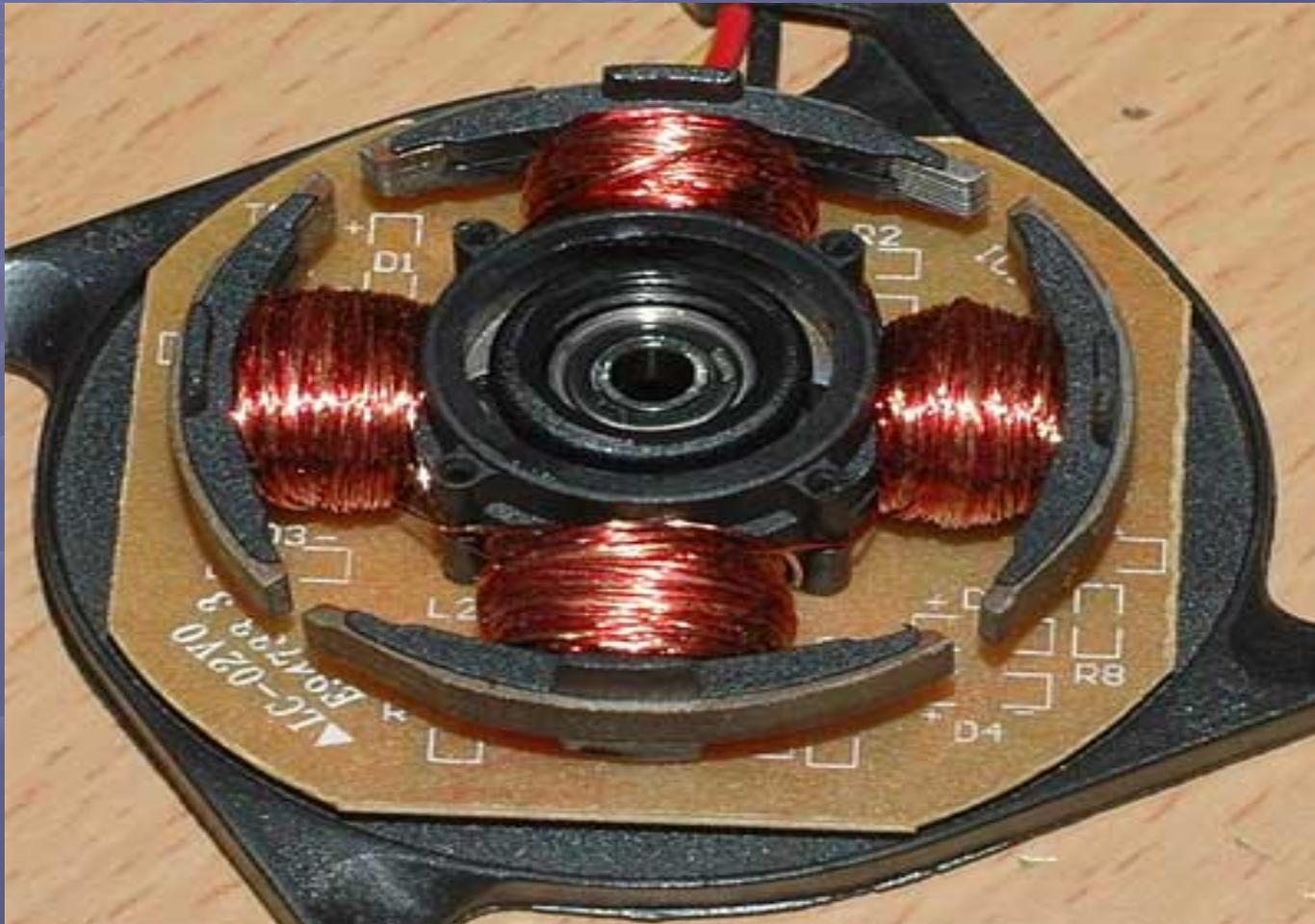
Spinning Armature

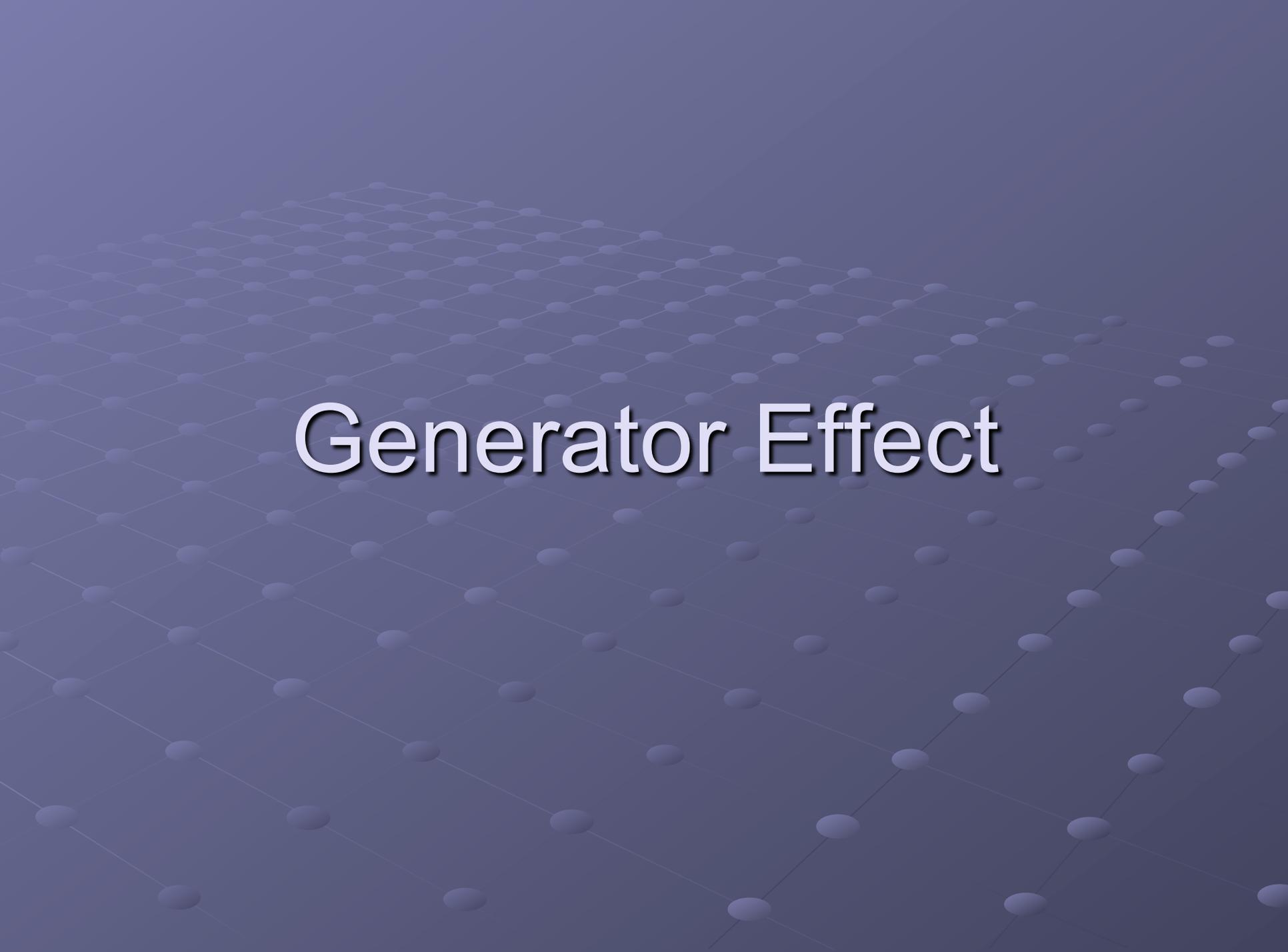




Motor Effect

Example of Motor

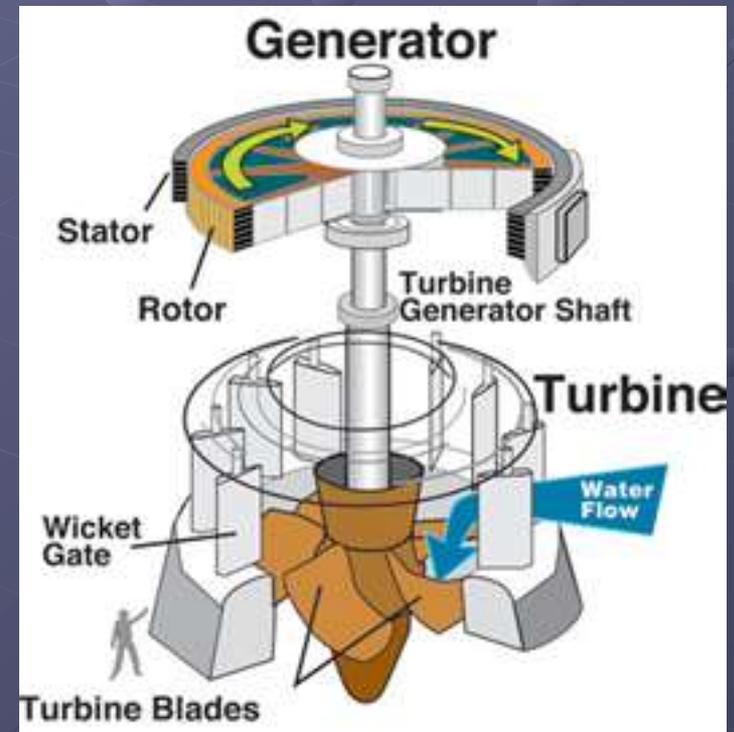


A 3D grid of spheres on a blue background. The spheres are arranged in a regular pattern, receding into the distance to create a perspective effect. The background is a solid, medium-blue color.

Generator Effect

Generator Effect

- Converts mechanical energy to electrical energy.
- This reverse of a motor



- A generator forces electric charges to move through an external electrical circuit
- It does not *create* electricity or charge, which is already present in the wire

