

COULOMB'S LAW AND BIOT-SAVORT'S LAW

COMPARISON

Similarities between Coulomb's law and Biot-Savort's law

Electric and magnetic fields

- ❖ Obey inverse square law, so they are long range fields.
- ❖ Obey the principle of superposition and are linear with respect to source. In magnitude,

$$E \propto q$$

$$B \propto Idl$$

Difference between Coulomb's law and Biot-Savort's law

S. No.	Electric field	Magnetic field
1	Produced by a scalar source i.e., an electric charge q	Produced by a vector source i.e., current element $I d\vec{l}$
2	It is directed along the position vector joining the source and the point at which the field is calculated	It is directed perpendicular to the position vector \vec{r} and the current element $I d\vec{l}$
3	Does not depend on angle	Depends on the angle between the position vector \vec{r} and the current element $I d\vec{l}$