Law of Biot and Savart

- Current element: $Id\vec{s} = dq\vec{v}$ [1Am = 1Cm/s]
- Magnetic field of current element: $dB = \frac{\mu_0}{4\pi}\frac{dqv\sin\theta}{r^2} = \frac{\mu_0}{4\pi}\frac{Ids\sin\theta}{r^2}$
- Vector relation: $d\vec{B} = \frac{\mu_0}{4\pi}\frac{Id\vec{s}\times\hat{r}}{r^2}$
- Magnetic field generated by current of arbitrary shape:

$$\vec{B} = \frac{\mu_0}{4\pi}\int\frac{Id\vec{s}\times\hat{r}}{r^2} \quad \text{(Law of Biot and Savart)}$$