

The standard form of a Gaussian current $I(t)$ representing a total charge Q is

$$I(t) = \frac{Q}{\sqrt{2\pi\tau}} \exp\left[-\frac{t^2}{2\tau^2}\right]$$

Where 2τ is the laser pulse length (68.3% of total area) and

$$Q = \int_{-\infty}^{\infty} I(t) dt$$