e/m formulas

$$\left.\begin{aligned} Ue &= \tfrac{1}{2}mv^2 \\ evB &= \frac{mv^2}{r} \end{aligned}\right\} \quad \begin{aligned} v &= \frac{2U}{Br} \\ \frac{e}{m} &= \frac{2U}{B^2r^2} \end{aligned}$$

$$\frac{B}{I} = \frac{8N\mu_0}{5\sqrt{5}R}. \qquad \frac{e}{m} = \frac{I^2}{B^2}\cdot 2\frac{U}{I^2r^2} = \text{const.}\cdot\frac{U}{I^2r^2}$$

where const. $= 2\frac{I^2}{B^2} = 2\left(\frac{5\sqrt{5}R}{8N\mu_0}\right)^2$.

$$v = \sqrt{2U\frac{e}{m}}. \qquad \gamma = \frac{1}{\sqrt{1-v^2/c^2}}$$

$$r^2 = \text{const.}\ \frac{m}{e}\times\frac{U}{I^2}.$$

r^2 as fct. of U (I const.): $r^2 = \text{const.}\ \frac{m}{e}\times\frac{1}{I^2}\times U$

r^2 as fct. of $\frac{1}{I^2}$ (U const.): $r^2 = \text{const.}\ \frac{m}{e}U \times\frac{1}{I^2}$.