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$$1. \quad a^2 = x_i^{(NC)} \tau_E = 0.68 q^2 \varepsilon^{-3/2} x_i^{(CL)} \tau_E = 0.68 q^2 \varepsilon^{-3/2} \cdot 0.1 \frac{n_{20}}{B_0^2 T_k^{1/2}} \tau_E,$$

$$q=2, \varepsilon = \frac{a}{R} = 1/3, T_k=10, n_{20} T_k \tau_E > 30, B_0=5T,$$

$$\rightarrow a > 0.23m. \rightarrow R > 0.69m.$$

$$q = \frac{2\pi a^2 K B_0}{\mu R I} > 2, K < 2. \rightarrow I \approx 1.92MA.$$

$$n_{20} = \frac{I}{\pi a^2} \approx 11.55 \rightarrow n \approx 1.55 \times 10^{20} m^{-3}.$$

2. (1). 增大磁物, 寻找可以使磁场上限更高的磁体材料.

(2). 更大的托卡马克可以提高约束性能, 降低磁场需求.