

Smith

IIB branes

$$d = 10$$

$$4\pi \alpha'^2 = (2\pi\ell)^8$$

$$\text{ev } p + q = 8$$

$$\begin{cases} F_2^- \\ F_6^- \end{cases} \quad \begin{cases} D_0^- \\ D_8^- \end{cases} \quad \begin{cases} D_2^- \\ D_6^- \end{cases} \quad \begin{cases} D_4^- \\ D_4^- \end{cases} \quad \begin{cases} D_{-2}^- \\ D_{10}^- \end{cases}$$

$\text{SL}_2^{\mathbb{Z}}$ action

$$\tau = \varrho + i\sqrt{3}$$

$$\frac{p}{q} \Big| \frac{r}{s} \begin{bmatrix} \sqrt{3} \\ \varrho - \sqrt{3} \end{bmatrix} \sim \begin{cases} (p:q)_2^- = pF_2^- + qD_2^- \\ (p:q)_6^- = pF_6^- + qD_6^- \end{cases}$$

$$\text{em duality : } D_4^- \text{ effective action} = \begin{cases} N = 4 \\ \text{sYM}_4^- \end{cases}$$

$$(p:q)_2^- \text{ open strings ending on } D_4^-$$