Johansen

fibre periods base singularities monodromy matrix

gauge group $D_4 = \mathrm{SO}_8 \Leftrightarrow \mathbb{T}^4/\mathbb{Z}_2$ orientifold

$$\begin{cases} \deg {}^z f = 2 \\ \deg {}^z g = 3 \end{cases} \Rightarrow \deg {}^z \Delta = 6 \Rightarrow 0_{\mathbb{C}} = 6\, D^7$$

$${}^z f_{\mathrm{sin}} = z^2 \Rightarrow {}^z f_{\mathrm{reg}} = z^2 - z\frac{6}{q} + \frac{2q}{3}$$

$${}^z \Delta_{\mathrm{sin}} = z^4\left(5z^2 - 6z - 1\right) = 5\,z^4\left(z - z_1\right)\left(z - z_2\right)$$

brane config : $\quad {}^4 G^1_{0:1} * G^1_{1:3} * G^1_{1:1}$

$$M_\infty = -1 = M_0^4\, M_1\, M_2$$

$$G^1_{0:1}: \quad M_0 = S^{-1} T S$$

$$G^1_{1:3}: \quad M_1 = M_0^{-3} T\, M_0^3$$

$$G^1_{1:1}: \quad M_2 = M_0^{-1}\, T^3\, M_0$$

unbroken $\ \mathrm{SU}34 \subset \mathrm{SO}_8 \Leftrightarrow 4\,D^7$ at $z = 0$

$${}^z g_{\mathrm{sin}} = z^3 \Rightarrow {}^z g_{\mathrm{reg}} = 2\,z^3 + 2qz + 2$$

$$\mathrm{SO}_{2n+8}/\mathrm{SU}_{n+4} \times U_1 \begin{cases} M_\infty = M_0^{4+n} M_1 M_2 \\ {}^{n+4} G^1_{0:1} * G^1_{1:3} * G^1_{1:1} \end{cases}$$

$$E_6/\mathrm{SU}_2 \times \mathrm{SU}_2 \begin{cases} M_\infty = ST = M_0^5 M_1 M_2^2 \\ {}^5 G^1_{0:1} * G^1_{1:3} * {}^2 G^1_{1:1} \end{cases}$$

$$E_7/\mathrm{SU}_2 \times \mathrm{SU}_2 \begin{cases} M_\infty = S = M_0^6 M_1 M_2^2 \\ {}^6 G^1_{0:1} * G^1_{1:3} * {}^2 G^1_{1:1} \end{cases} \Rightarrow \mathbb{T}^4/\mathbb{Z}_4$$

$$E_8/\mathrm{SU}_2 \times \mathrm{SU}_2 \begin{cases} M_\infty = ST = M_0^7 M_1 M_2^2 \\ {}^7 G^1_{0:1} * G^1_{1:3} * {}^2 G^1_{1:1} \end{cases}$$