

# Tohu Charge Displacement Coordinates

## Harari-Shupe-Seiberg Chromoelectric (Tohu) Charge Displacement Coordinates

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$$\begin{aligned} TTT &= T_1 + T_2 + T_3 \\ \overline{TTT} &= -T_1 - T_2 - T_3 \end{aligned}$$

$$T_1 = \bar{r} + \frac{1}{3}e = \text{charge}(\bar{d}_r)$$

$$T_2 = \bar{g} + \frac{1}{3}e = \text{charge}(\bar{d}_g)$$

$$T_3 = \bar{b} + \frac{1}{3}e = \text{charge}(\bar{d}_b)$$

$$-T_1 = \overline{T_1} = r - \frac{1}{3}e = \text{charge}(d_r)$$

$$-T_2 = \overline{T_2} = g - \frac{1}{3}e = \text{charge}(d_g)$$

$$-T_3 = \overline{T_3} = b - \frac{1}{3}e = \text{charge}(d_b)$$

Placeholder:  $V$  ( $=0$ , *no anti*). Example:  $TVT = T_1 + T_3 = \text{charge}(u_g)$

Tohu units are mutually orthogonal for *all* fermions:  $(T_i \perp T_j)_{i \neq j}$