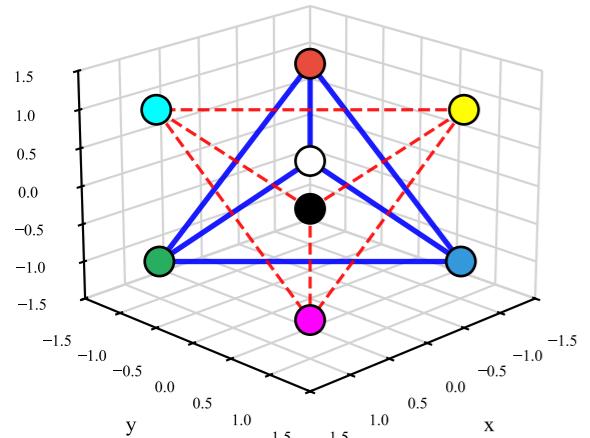
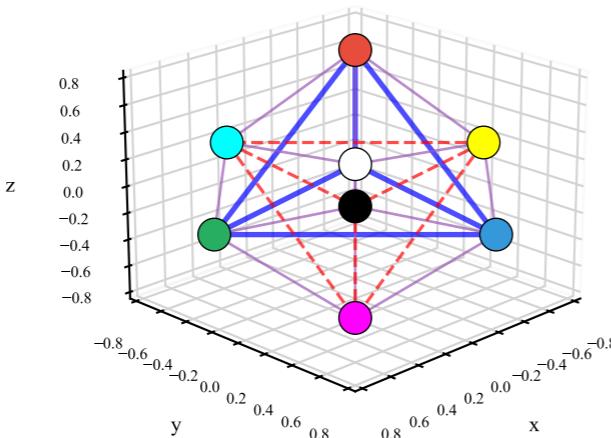


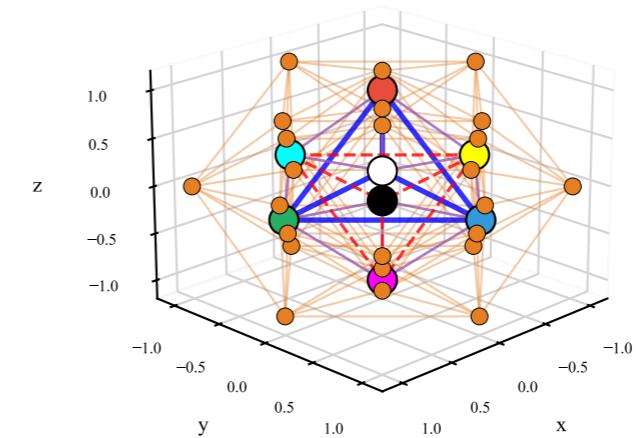
(a) Stella Octangula
 T_+ (RGB) $\cup T_-$ (cyan)



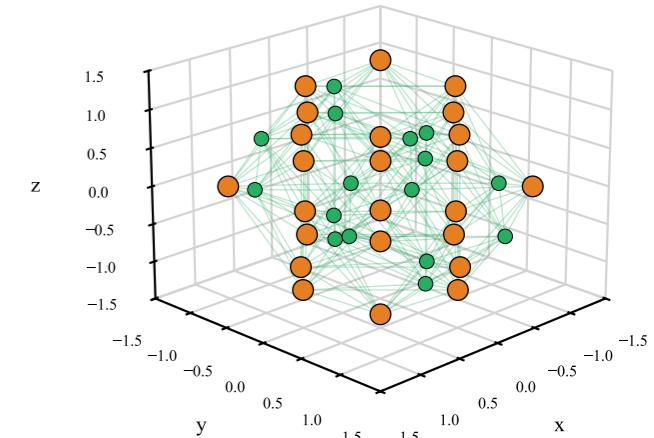
(b) 16-cell
 $\phi(T_+) = +e_i, \phi(T_-) = -e_i$



(c) 24-cell (D_4)
16-cell $\subset D_4$ roots



(d) $\mathfrak{so}(10)$ (D_5)
 $D_4 \subset D_5$ (**40 roots**)



(e) GUT Embedding Chain

\subset

Stella
 $S_4 \times \mathbb{Z}_2$



\subset

16-cell
 B_4



\subset

24-cell
 D_4



break

$\mathfrak{so}(10)$
 D_5



$SU(3) \times SU(2) \times U(1)$

$$\sin^2 \theta_W = 3/8 \text{ at GUT scale}$$