

$$^{X:Y}\text{Ham} = X^8 + 14 X^4 Y^4 + Y^8 = E_4 = G_4/2\zeta_4$$

$$^{X:Y}\text{Gol} = \overbrace{X^8 + 14 X^4 Y^4 + Y^8}^3 - 42 X^4 Y^4 \overbrace{X^4 - Y^4}^4 = E_4^3 - \frac{7}{18} \Delta$$