The transformation of a SEXT is given as

$$\begin{aligned} &\exp(:F_{\mathrm{in}}:)\exp(:a\mathtt{L}:)\exp(:H_2/2:)\exp(:b\mathtt{L}:) \\ &\times\exp(:V_2:)\exp(:a\mathtt{L}:)\exp(:H_2/2:)\exp(:b\mathtt{L}:)\exp(:F_{\mathrm{out}}:)\,, \end{aligned}$$

where L and H_2 are the Hamiltonians of a drift of length L and a thin sextupole kick with integrated strength K2:

$$H_2 = \frac{\mathtt{K2}}{3!}\Re(x-iy)^3\,,$$

respectively. The coeffients are $a \equiv 1/2 - 1/\sqrt{12}$ and $b = 1/2 - a$. Terms $\exp(:F_{\mathrm{in}}:)$ and $\exp(:F_{\mathrm{out}}:)$ are transformation nonlinear fringes. The term $\exp(:V_2:)$ is a correction to adjust the third-order terms in L:

$$V_2 = \sum_{j=(x,y),k=(x,y)} -\frac{\beta}{2}H_{2,k}^2 + \gamma H_{2,j}H_{2,k}H_{2,j,k}\,,$$

where $,i$ represents the derivative by x or y. We have also introduced two coefficients $\beta \equiv 1/6 - 1/\sqrt{48}$ and $\gamma = 1/40 - 1$