

$$\begin{aligned}
&= 2^{2s-1} \sqrt{4\pi} \Gamma\left(s - \frac{1}{2}\right) T_2^{1-s} \kappa^{s-\frac{1}{2}} \sigma_{1-2s}(\kappa) E(s; U) \\
&\quad + 2\sqrt{T_2} \sum_{N>0} \sum_{d|\kappa} \sqrt{\frac{d}{\kappa|N|}} e^{2\pi i N d T_1} K_{s-\frac{1}{2}}(2\pi|N|dT_2) \mathcal{F}_U\left(s, \frac{|N|\kappa}{d}, 0\right)
\end{aligned}$$