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Spectral properties of some functional-difference operators for mirror curves

We present some results related to spectral properties of functional-difference operators associated to mirror curves of special del Pezzo Calabi-Yau threefolds including Weyl type asymptotics. These operators are $H = U + U^{-1} + V + V^{-1}$ and $H_{m,n} = U + V + q^{mn}U^{-m}V^{-n}$, where U and V are self-adjoint Weyl operators satisfying $UV = q^2VU$ with some $q = e^{ib^2}$, $b > 0$. We prove that H and $H_{m,n}$ are self-adjoint operators with purely discrete spectrum. In particular, using the coherent state transform we prove the Weyl law for the eigenvalue counting function $N(\lambda)$ for these operators, which imply that their inverses are of trace class.