

Fourier–Mukai and Nahm
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Fourier–Mukai transforms for coherent systems on elliptic curves

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Abstract

We determine all the Fourier–Mukai transforms for coherent systems consisting of a vector bundle over an elliptic curve and a subspace of its global sections, showing that these transforms are indexed by the positive integers. We prove that the natural stability condition for coherent systems, which depends on a parameter, is preserved by these transforms for small and large values of the parameter. By means of the Fourier–Mukai transforms we prove that certain moduli spaces of coherent systems corresponding to small and large values of the parameter are isomorphic. Using these results we draw some conclusions about the possible birational type of the moduli spaces. We prove that for a given degree d of the vector bundle and a given dimension of the subspace of its global sections there are at most d different possible birational types for the moduli spaces.