

We present a detailed study of Fourier-Mukai partners of elliptic K3 surfaces. One way to produce Fourier-Mukai partners of elliptic K3 surfaces is by taking Jacobians. We answer the question of whether every Fourier-Mukai partner is obtained in this way. This question was raised by Hassett and Tschinkel in 2015. We fully classify elliptic fibrations on Fourier-Mukai partners in terms of Hodge-theoretic data, similar to the Derived Torelli Theorem that describes Fourier-Mukai partners. This classification has an explicit computable form in Picard rank two, building on the work of Stellari and Van Geemen. We prove that for a large class of Picard rank 2 elliptic K3 surfaces all Fourier-Mukai partners are Jacobians. However, we also show that there exist many elliptic K3 surfaces with Fourier-Mukai partners which are not Jacobians of the original K3 surface. This is joint work with Evgeny Shinder.