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Andreas Malmendier* (andreas.malmendier@usu.edu), 3900 Old Main Hill, Logan, UT 84322, and **Tony Shaska**, Department of Mathematics and Statistics, Rochester, MI 48309. *The Satake sextic in elliptic fibrations on $K3$.*

We describe explicit formulas relevant to the F-theory/heterotic string duality that reconstruct from a specific Jacobian elliptic fibration on the Shioda-Inose surface covering a generic Kummer surface the corresponding genus-two curve using the level-two Satake coordinate functions. We derive explicitly the rational map on the moduli space of genus-two curves realizing the algebraic correspondence between a sextic curve and its Satake sextic. We will prove that it is not the original sextic defining the genus-two curve, but its corresponding Satake sextic which is manifest in the F-theory model, dual to the $\mathfrak{so}(32)$ heterotic string with an unbroken $\mathfrak{so}(28) \oplus \mathfrak{su}(2)$ gauge algebra. (Received September 19, 2016)