Twisted cubics on cubic fourfolds

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The moduli space of generalised twisted cubic curves on a smooth cubic fourfold Y that does not contain a plane is shown to be smooth, 10-dimensional and projective, and to admit a contraction to an 8-dimensional smooth variety $Z(Y)$ that is irreducible holomorphic symplectic. Varying $Z(Y)$ with Y gives a complete 20-dimensional family of projective holomorphic symplectic manifolds. If Y is a pfaffian cubic, $Z(Y)$ is birational to the fourth Hilbert scheme of points on the K3-surface associated to Y by Beauville–Donagi.