

Geometry and Arithmetic of Certain Double Octic Calabi–Yau Manifolds

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Abstract. We study Calabi–Yau manifolds constructed as double coverings of \mathbb{P}^3 branched along an octic surface. We give a list of 87 examples corresponding to arrangements of eight planes defined over \mathbb{Q} . The Hodge numbers are computed for all examples. There are 10 rigid Calabi–Yau manifolds and 14 families with $h^{1,2} = 1$. The modularity conjecture is verified for all the rigid examples.

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