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Mathieu Moonshine: Quarter BPS states at the Kummer point and nearby

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The construction of $\mathbb{Z}_2$ orbifolds of toroidal conformal field theories (CFTs) is induced by the Kummer construction of a K3 surface. These theories provide a vantage point from which to study the quarter BPS states of K3 theories which are at the heart of the Mathieu Moonshine phenomenon. In this talk, we argue that a non-trivial SU(2) action on a subspace of quarter BPS states in these orbifold CFTs governs the pairing of states that lift from the BPS bound upon a given type of deformation.

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