

Non-split singularities and conifold transitions in F-theory

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In F-theory, if a fiber type of an elliptic fibration involves a condition that requires an exceptional curve to split into two irreducible components, it is called “split” or “non-split” type depending on whether it is globally possible or not. In the latter case, the gauge symmetry is reduced to a non-simply-laced Lie algebra due to monodromy. We show that the transition from a split to a non-split model is, except in certain exceptional cases, a conifold transition from the resolved to the deformed side, associated with the conifold singularities emerging at the codimension-two loci where the codimension-one singularity is enhanced to D_{2k+2} or E_7 . This clarifies the origin of non-local matter in the non-split case, which has been a mystery for many years. Reference: arXiv:2108.10136 [hep-th]

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