Swampland Bounds on Magnetized Extra Dimensions

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Abstract

We consider a six-dimensional U(1) gauge theory compactified on two-dimensional manifolds. The number of chiral fermions is determined by the flux quantization number on the two-dimensional compact manifolds. Using the Swampland Conjectures, we find constraints among the parameters of the theory: the flux quantization number, the compactification scale, and the string scale. Specifically, the Weak Gravity Conjecture and the Trans-Planckian Censorship Conjecture give non-trivial bounds.

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