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Cobordisms and the Swampland

The Swampland program aims to constrain low-energy physics of quantum gravity in a universal way. Recently, much progress has been made by the application of techniques of corbordism theory, which quantify topology-changing processes and can have a strong impact on low-energy physics. I will focus on two such results: Cobordisms can be used to produce a wide class of new examples of bubbles of nothing, which are universal instabilities of nonsupersymmetric vacua. Secondly, cobordisms also constrain the periodicity of the rank of higher-dimensional N=1 supersymmetric theories. The resulting constraint is so strong that it allows one to achieve string universality: The only observed values of the rank in string compactifications are precisely those allowed by Swampland constraints.

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