

Universality in the String Axiverse

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Studies of axion effective theories in the type IIB Calabi-Yau landscape have revealed that hierarchies in geometric volumes drive correlations between axion physics and the number of axions in a given model. We provide evidence that distributions of appropriately normalized divisor volumes in the toric hypersurface Calabi-Yau threefolds are universal across this landscape. Furthermore, we show that divisor volumes are the most relevant data to approximate string-derived axion effective theories. Finally, we propose a simple model for the spectrum of normalized divisor volumes and use this model to reproduce results on axion masses and decay constants across the Kreuzer-Skarke axiverse.

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