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The anomaly that was not meant IIB

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Type IIB supergravity famously has a discrete duality group, which is an exact symmetry of the full type IIB string theory. This symmetry has potential quantum anomalies, which could render the theory inconsistent. In this talk I will describe how we computed these anomalies in recent work, and show they are nonvanishing, but remarkably, they can be cancelled by a subtle modification of the IIB Chern-Simons term in what amounts to a new variant of the Green-Schwarz mechanism. This can only happen because of some “miraculous cancellations” that depend on the details of the IIB supergravity spectrum. I will also describe alternative ways to cancel this anomaly, presenting variant versions of IIB string theory which have the same IIB supergravity as the low-energy limit, but which differ at the nonperturbative level. These theories may or may not be in the Swampland.

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