

Triadophilia: A special corner in the landscape

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Abstract

It is well known that there are a great many apparently consistent vacua of string theory. We draw attention to the fact that there appear to be very few Calabi–Yau manifolds with the Hodge numbers h^{11} and h^{21} both small. Of these, the case $(h^{11}, h^{21}) = (3, 3)$ corresponds to a manifold on which a three-generation heterotic model has recently been constructed. We point out also that there is a very close relation between this manifold and several familiar manifolds including the “three-generation” manifolds with $\chi = -6$ that were found by Tian and Yau, and by Schimmrigk, during early investigations. It is an intriguing possibility that we may live in a naturally defined corner of the landscape. The location of these three-generation models with respect to a corner of the landscape is so striking that we are led to consider the possibility of transitions between heterotic vacua. The possibility of these transitions, that we here refer to as transgressions, is an old idea that goes back to Witten. Here we apply this idea to connect three-generation vacua on different Calabi–Yau manifolds.

Triadophilia from G. a love of three-ness, a nostalgia for a world of three generations. Less precise but also less cumbersome than *tritogeneia-philía*.