

# Heterotic Kähler/non-Kähler transitions

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## Abstract

We show how two topologically distinct spaces — the Kähler  $K3 \times T^2$  and the non-Kähler  $T^2$  bundle over  $K3$  — can be smoothly connected in heterotic string theory. The transition occurs when the base  $K3$  is deformed to the  $T^4/\mathbb{Z}_2$  orbifold limit. The orbifold theory can be mapped via duality to M-theory on  $K3 \times K3$  where the transition corresponds to an exchange of the two  $K3$ 's.

## 1 Introduction

Background geometry affects strings and point particles very differently. From the many well-studied string dualities, we know that string theories on different geometrical spaces can be dual, that is, identical up to some