

Abstract Submitted
for the APR14 Meeting of
The American Physical Society

Warped Kaluza-Klein reduction from string duality¹ MICHAEL SCHULZ, ELLIOTT TAMMARO, Bryn Mawr College — Virtually all phenomenologically relevant string theory compactifications are of warped type, in which the overall scale factor of 4D spacetime varies over the internal dimensions. However, the procedure for Kaluza-Klein (KK) reduction is more poorly understood for warped compactifications than for standard compactifications. The simplest standard compactifications are compactifications on tori, and the simplest warped compactifications differ from these by the addition of parallel D-branes and O-branes. It is astonishing that a direct derivation of the dimensionally reduced action does not exist even for these simple warped compactifications (which are T-dual to Type I), although the answer is known on supersymmetry grounds. We fill this void. We derive the procedure for the KK reduction of a simple Type IIA warped compactification with D6 branes and O6 planes, via its lift to the standard compactification of M-theory on K3. Our derivation utilizes an approximate K3 metric of Gibbons-Hawking form, which is exactly equivalent to the classical type IIA supergravity description of the warped compactification.

¹This material is based upon work supported by the National Science Foundation under Grant Nos. PHY09-12219 and PHY11-25915.

Michael Schulz
Bryn Mawr College

Date submitted: 10 Jan 2014

Electronic form version 1.4