

Ilka Brunner (LMU München)  
Nils Carqueville (Universität Wien)  
Hans Jockers (JGU Mainz)  
Peter Mayr (LMU München)  
Simone Noja (Universität Heidelberg)  
Ivo Sachs (LMU München)  
Johannes Walcher (Universität Heidelberg)

JOHANNES GUTENBERG  
UNIVERSITÄT MAINZ



# RIND seminar on Mathematical Physics and String Theory

Dec. 12, 2022 at 4 p.m. c.t.  
None

Joint seminar series on Mathematical Physics and String Theory

Ida Zadeh  
JGU Mainz

## **Heterotic Strings on $T^3/Z_2$ , Nikulin involutions and M-theory**

I will discuss compactification of the heterotic string on the smooth, flat 3-manifold  $T^3/Z_2$ , without supersymmetry. The low energy dynamics of the corresponding ten dimensional heterotic supergravity will be described. The semi-classical theory has both Coulomb and Higgs branches of non-supersymmetric vacua. An exact worldsheet description of the compactification will then be presented using the framework of asymmetric orbifolds of  $T^3$ , where the orbifold generator involves a Nikulin non-symplectic involution of the even self-dual lattice of signature  $(19,3)$ . This construction gives a novel conformal field theory description of the semi-classical field theory moduli space and reveals a rich pattern of transitions amongst Higgs and Coulomb branches.

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