Orbifolds and Orientifolds as O-folds

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Strings
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Based on:
1805.04524 *with E. Malek and D. Thompson* (short version: 1903.09411)

1. *Proposed* a common description of orbifolds and orientifolds as

   O-folds: Quotients by $G_{discrete} \subset E_d$ U-duality group

   & analysed using exceptional field theory [Samtleben talk, Thursday]

2. *Studied* e.g. $\mathbb{Z}_2 \subset E_d$ quotient of ExFT
   $\rightarrow$ Hořava-Witten, type I, type II with orientifolds, heterotic $E_8 \times E_8$, heterotic $SO(32)$ SUGRAs

3. *Included* extra degrees of freedom at fixed points (incl. gauge fields of Hořava-Witten, heterotic, type I)

4. *Classified* quotients preserving half-maximal SUSY
   e.g. $d = 4$: $G_{discrete} \subset SU(2) \subset SL(5) \Rightarrow$ ADE

5. *Discussed* generic O-folds: non-geometric ($y \sim \tilde{y}$), non-perturbative