

## 2d (super)gravity and exceptional geometry

*Tuesday, 17 November 2020 14:30 (1 hour)*

Upon torus reduction to two dimensions, (super)gravity theories exhibit an infinite-dimensional group of global symmetries –such as the Geroch group for GR, and  $E_9$  for maximal supergravity. These symmetries can be gauged to give rise to more non-trivial dynamics, possibly reflecting flux compactifications on complicated backgrounds. For instance,  $AdS_2$  solutions in 2d gauged supergravity may arise from reduction on the compact part of black hole near-horizon geometries. The full structure of these gauged models has so far been elusive and little is known about the flux compactifications leading to them.

I will describe the construction of exceptional field theory for affine Lie algebras, a formalism that promotes the (Geroch/ $E_9$ ) symmetries of 2d (super)gravity to formal invariances of their higher-dimensional parent theories, which greatly simplifies the study of certain classes of flux compactifications and should help us complete the construction of the associated two-dimensional gauged models.

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