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Supersymmetric AdS Solitons, Coulomb Branch Flows, Twisted Compactifications and their Marginal Deformations

Wednesday 17 December 2025 19:20 (20 minutes)

I will speak about the papers <https://arxiv.org/pdf/2506.10062v3> and another two to appear shortly.

We construct and analyse infinite classes of regular supergravity backgrounds dual to four-dimensional SCFTs compactified on a circle with a supersymmetry-preserving twist. These flows lead to three-dimensional gapped QFTs preserving four supercharges. The solutions arise in Type IIB, Type IIA, and eleven dimensional supergravity, and generalise known constructions by incorporating deformations that avoid typical singularities associated with the holographic description of the Coulomb branch of the CFT. We examine several observables: Wilson loops, holographic central charges, and complexity. We show they exhibit a universal factorisation, with each observable decomposing into a UV-CFT contribution times a flow-dependent factor. We also explore the parameter regimes where higher-curvature corrections become relevant, affecting the physical interpretation of certain observables. We also look at marginal deformations via the TsT procedure to construct new solutions using the IIB background and analyse their Page charges.

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