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## The Unreasonable Effectiveness of Higher-Derivative Supergravity in AdS<sub>4</sub> Holography

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I will describe the four-derivative corrections to four-dimensional  $N=2$  minimal gauged supergravity and show that they are controlled by two constants. Interestingly, the solutions of the equations of motion in the two-derivative theory are not modified by the higher-derivative corrections. I will use this to arrive at a general formula for the regularized on-shell action for any asymptotically locally AdS<sub>4</sub> solution of the theory and show how the higher-derivative corrections affect black hole thermodynamic quantities in a universal way. I will employ these results in the context of holography to derive new explicit results for the subleading corrections in the large  $N$  expansion of supersymmetric partition functions on various compact manifolds for a large class of three-dimensional SCFTs arising from M2-branes. I will also briefly discuss possible extensions and generalizations of these results.

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