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## Extremal Black Holes and Quantum Gravity

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Extremal black holes are black holes of which the asymptotic charges saturate certain inequalities that ensure weak cosmic censorship. As theoretical playgrounds, they have proven to be instrumental in our understanding of quantum gravity through e.g. microstate counting and swampland conjectures.

Recently, it was noted that extremal black holes generically suffer from singularities on their event horizons. Particular deformations of asymptotically extremal black holes were shown to be marginal, causing the existence of these divergences to strongly depend on even small higher-derivative effective field theory (EFT) corrections, i.e. quantum gravity effects.

In this talk, I will re-examine these singular deformations with a particular focus on the extremal limit and breakdown of perturbation theory. I will then study EFT corrections to a tower of marginally deformed extremal charged black holes in AdS and speculatively derive bounds on EFT coefficients from them. These are closely related to otherwise known bounds from causality, positivity, and the swampland programme, and would provide direct insight into UV completions to GR.

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