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One-loop divergences in 7D Einstein and 6D Conformal Gravities

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The aim of this work is to unveil a striking equivalence between the one-loop divergences in 7D Einstein and 6D conformal gravities.
The particular combination of 6D pointwise Weyl invariants of the 6D conformal gravity corresponds to those of Branson's Q-curvature and can be written solely in terms of the Ricci tensor and its covariant derivatives.
The quadratic metric fluctuations of this action, 6D Weyl graviton, are endowed with a sixth-order kinetic operator that happens to factorize on a 6D Einstein background into product of three shifted Lichnerowicz Laplacians. We exploit this feature to use standard heat kernel techniques and work out in one go the UV logarithmic divergences of the theory that contains in this case the four Weyl anomaly coefficients.
In a seemingly unrelated computation, we determine the one-loop IR logarithmic divergences of 7D Einstein gravity in a particular 7D Poincaré-Einstein background that is asymptotically hyperbolic and has the above 6D Einstein manifold at its conformal infinity or boundary.
We show the full equivalence of both computations, as an outgrowth of the IR/UV connection in AdS/CFT correspondence, and in this way the time-honoured one-loop calculations in Einstein and higher-derivative gravities take an interesting new turn.
If time permits, we elaborate on one-loop Witten diagrams in AdS which should encode equivalent information.

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