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Scattering amplitudes of massive spin-2 particles in Extra Dimensional theories

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We describe the computation of the scattering amplitudes of massive spin-2 Kaluza-Klein excitations in a gravitational theory with a single compact extra dimension, whether flat or warped. These scattering amplitudes are characterized by intricate cancellations between different contributions: although individual contributions may grow as fast as $O(s^5)$, the full results grow only as $O(s)$. We demonstrate that the cancellations persist for all incoming and outgoing particle helicities and examine how truncating the computation to only include a finite number of intermediate states impacts the accuracy of the results. We also carefully assess the range of validity of the low energy effective Kaluza-Klein theory. In particular, for the warped case we demonstrate directly how an emergent low energy scale controls the size of the scattering amplitude, as conjectured by the AdS/CFT correspondence

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