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It is a Graviton! or maybe not

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Abstract:

The discovery of Kaluza-Klein (KK) gravitons is a smoking gun of extra dimensions. Other scenarios, however, could give rise to spin-two resonances of a new strongly-coupled sector and act as impostors. In this talk we show that a spin-two resonance does not couple to the Standard Model through dimension-four operators. We then show that the massive graviton and its impostor both couple to the Standard Model through the same dimension-five operators. Therefore the spin determination is identical. Nevertheless, we also show that one can use the ratio of branching ratios to photons and to jets for distinguishing between KK gravitons and their impostors. The capacity to distinguish between KK gravitons and impostors is a manifestation of the breakdown of the duality between AdS and strongly-coupled theories.

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