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## Implications of unitarity for the di-photon resonance at 750 GeV

*Tuesday 10 May 2016 16:45 (15 minutes)*

I discuss the constraints implied by partial wave unitarity on new physics models explaining the LHC di-photon excess at 750 GeV. I argue that the effective description in terms of the SM supplemented by a single scalar resonance  $S$  breaks down at scales of few tens of TeV, where perturbative unitarity is violated due to the large cross-section required in order to fit the  $\gamma\gamma$  signal. Likewise, I show that unitarity arguments can be used to set perturbativity bounds on renormalizable UV completions of the  $S$ -effective operators and discuss under which conditions the data can be accommodated within weakly-coupled models.

### Summary

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