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Bounding the Higgs width through interference effects

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The Higgs decay width can be constrained by exploiting interference effects of the $pp \to H \to \gamma\gamma$ signal with the $pp \to \gamma\gamma$ continuum background, which leads to a width-dependent shift of the Higgs mass peak. I review a study in which my collaborators and I investigate the reach of an analysis that determines the reference mass by measuring the di-photon final state at high transverse momenta, using a full particle-level prediction calculated with the Monte-Carlo event generator Sherpa. We also propose a yet more powerful technique based on a direct fit to the experimentally observable $m_{\gamma\gamma}$ line shape.

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