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## **Gauge Invariance at work in Four Dimensional Regularization (FDR): the Higgs decay into two photons.**

We present the first complete calculation performed within the Four Dimensional Regularization scheme (FDR), namely the loop-induced on-shell amplitude for the Higgs boson decay into two photons in an arbitrary gauge. FDR is a new technique -free of infinities- for addressing multi-loop calculus, which automatically preserves gauge invariance, allowing for a 4-dimensional computation at the same time. We obtained the same result as that assessed in dimensional regularization, thereby explicitly verifying, in a realistic case, that FDR respects gauge invariance.

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