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Search for Standard Model Higgs boson in gamma gamma final state at the Tevatron

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We present a search for Higgs bosons decaying to the di-photon final state using 5 fb⁻¹ of data at a center-of-mass energy of $\sqrt{s}=1.96$ TeV at the Fermilab Tevatron collider. Whilst the branching ratio to the di-photon final state is small in the Standard Model, this channel contributes appreciably to the overall Higgs sensitivity at Tevatron. In parallel, the limit is re-interpreted in fermiophobic models where the di-photon branching ratio is considerably larger. This decay channel will be of major importance in the light mass Standard Model Higgs search at the LHC.

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