

# Testing the search for new resonances in the di-photon channel with topological requirements on the production of the Standard Model Higgs boson at the LHC

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Unlike supervised learning which is known to assume a full knowledge of the underlying model, weak supervision allows with partial knowledge to extract new information from the data.

The objective of this study is to set up the search for heavy resonances at the electroweak scale with topological requirements. These resonances are expected to be produced with different production mechanisms. In this case we will be focusing on the searches for new resonances in the di-photon final state. The performance of weak supervision methodology will be tested in the production of the Higgs boson in the Standard Model using deep neural networks. This will then be compared to the performance of the full supervision approach.

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