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The Level-1 CMS electron and photon trigger for the LHC Run II

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The CMS experiment implements a sophisticated two-level triggering system composed of the Level-1, instrumented by custom-design hardware boards, and a software High Level Trigger. A new Level-1 trigger architecture with improved performance is now being used to maintain high physics efficiency for the more challenging conditions experienced during Run II. The upgraded trigger benefits from an enhanced granularity of the calorimeters to optimally reconstruct electromagnetic objects. The performance of the new trigger system is presented, based on proton-proton collision data collected in 2017. We highlight the performance of the upgraded CMS electron and photon trigger in the context of Higgs boson decays into final states with photons and electrons. The selection techniques used to trigger efficiently on these benchmark analyses are presented, along with the strategies employed to guarantee efficient triggering for new resonances and other new physics signals involving electron and photon final states.

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