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Review and partial combination of searches for vector-like quarks

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The LHC has yielded an unprecedented volume of data from 2016 to 2018, presenting a unique opportunity to investigate fundamental questions in particle physics. This involves probing rare processes beyond the standard model and testing the standard model's limits with greater precision, potentially leading to the discovery of new physics. To leverage this data fully, novel methods are necessary to explore new phenomena and optimize detector performance. Particularly, the focus is on exploring fermions within a wide mass range, as they have the potential to explain various phenomena within the standard model. This poster discusses the CMS experiment's efforts in searching for vector-like quarks, emphasizing the exploration of different possible final states and the prospects for discovering these particles at the high-luminosity LHC.

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