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Search for the production of vector-like quarks at CMS (15' + 5')

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We present searches for vector-like quarks that only couple to light generation quarks, in LHC proton-proton collisions using the CMS experiment. Vector-like quarks are generally considered to mix significantly only with quarks of the third generation. However, cancellations among different vector-like quark contributions can relax constraints on mixing with lighter generations, leaving room for new quarks with sizable couplings to the light quarks. The heavy vector-like quarks can decay to a W, Z or H boson and a quark of the first generation. We use two approaches: an inclusive search for single and pair production, and an exclusive search for pair production with kinematic fit to exclusive channels. Final states with at least one muon or one electron are considered. Results are combined for single and pair production processes.

Presenter: HOGAN, Julie (Brown University (US))

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