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Supermodels: Early new physics at the LHC?

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We explore which new physics signatures could be discovered in the first year of the LHC, beyond the expected sensitivity of the Tevatron data and other constraints. We construct “supermodels”, for which the LHC sensitivity even with only 10 pb^{-1} useful luminosity is greater than that of the Tevatron with 10 fb^{-1} . The simplest scenarios involve s-channel resonances in the quark-antiquark and especially in the quark-quark channels. We concentrate on easily visible final states with small standard model backgrounds, and find that there are simple searches, besides those for Z' states, which could discover new physics in early LHC data. Many of these are well-suited to test searches for “more conventional” models, often discussed for larger data sets.

Primary author: LIGETI, Zoltan (Lawrence Berkeley National Laboratory)

Co-authors: BAUER, Christian (LBL); WALKER, Devin (Harvard); THALER, Jesse (MIT); SCHMALTZ, Martin (Boston University)

Presenter: LIGETI, Zoltan (Lawrence Berkeley National Laboratory)

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