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Flavoured naturalness and gluino mass bounds

While rare meson decays place stringent constraints on much of the flavour violating parameter space of supersymmetric models, the mixing between right-handed top and charm squarks is so far unconstrained by the available data. Such mixing has in fact a very appealing phenomenology: it significantly weakens the current experimental bounds from direct squark searches and leads to a modest reduction of fine-tuning. We therefore refer to this setup as flavoured naturalness.

In this talk we review constraints from LHC run I on squark and gluino masses in the presence of a non-zero stop-scharm mixing and mass splitting in the right-handed sector. When combining the searches, the resulting constraints in the plane of the lightest squark and gluino masses are rather stable with respect to the presence of flavor-violation, and do not allow for gluino masses of less than 1.2 TeV and squarks lighter than about 550 GeV. While these constraints are stringent, interesting models with sizable stop-scharm mixing and a relatively light squark state are still viable and could be observed in the near future.

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