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Distorted Mass Edges at LHC from supersymmetric Leptoquarks

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Supersymmetric (SUSY) Grand Unified Theories based on exceptional gauge groups like E_6 have recently triggered a lot of interest. Aside from top-down motivations, they contain phenomenologically interesting states with leptoquark quantum numbers. Their SUSY partners, leptoquarkinos, will appear like all R-odd particles in decay cascades, but mass edges in kinematic distributions – originating from the same semi-exclusive final states – will however have major differences to the corresponding edges of ordinary squarks. This offers the opportunity to distinguish them from standard squark and slepton states in cascades with identical exclusive final states. On the other hand, ascribing distortion of the edges to combinatorial SUSY backgrounds could lead to misinterpretation of future LHC data.

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