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Discovery opportunity of new physics with M_2 variables

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I will discuss discovery potential of new physics at hadron colliders using the recently proposed on-shell constrained M_2 variables. Particular focus is upon new physics signatures in the top quark sector, for which regular pair-produced top quarks are dominant background. The relevant signal processes are featured by an *asymmetric* event topology, whereas top quark pairs are *symmetric*. I will start with a brief introduction on the on-shell constrained M_2 variables, and then design the kinematic variables under the assumption of $t\bar{t}$ event topology, evoking some contradiction in relevant observables. To demonstrate how the technique works, I will take a couple of examples: 1) supersymmetric top partner search and 2) light dark force carrier search.

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