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Mass Determination in SUSY-like Events with Missing Energy

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We demonstrate that sparticle masses in a susy decay chain can be determined to within about 1 GeV using full kinematic information about the production events. A typical decay chain that we consider is gluino pair production followed by both gluinos decaying to the 2nd lightest neutralino, each of which decays to a slepton and a lepton, followed by each of the sleptons decaying to a lepton and the lightest neutralino (LSP). In short, we are able to determine the absolute mass scale with accuracy similar to that known to be achievable for mass differences in such a decay chain. A description of the technique will be given and several examples provided. The quoted precision is that obtained after including detector resolution and backgrounds.

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