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Applications of the Recursive Jigsaw to searches for SUSY

In R-parity conserving SUSY models one anticipates searching for signal events where multiple missing neutral particles are present in a final state. Typical collider signatures for such events leverage large missing transverse momentum and high values of inclusive quantities such as the effective mass. In addition, specific features of distributions can be targeted with variables that preserve end-points and other observable shapes.

Through application of the Recursive Jigsaw reconstruction technique we demonstrate methods by which one can extract information in events sensitive to the underlying mass-splittings and particle properties. By application of well-defined rules, and imposing a view of the event that satisfies a particular "decay tree", we demonstrate an approach that provides further handles to probe challenging signals. Searches for gluino and squark pair-production, third generation particles and direct electroweak-ino pairs are all used by way of example.

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