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Sleuth@CDF: A quasi-model-independent search for new electroweak scale physics

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Lacking precise theoretical direction for where to look for the first sign of physics beyond the Standard Model, it seems prudent to look in as many places as possible. Sleuth is a quasi-model-independent search strategy for new electroweak scale physics, appropriate for frontier energy hadron colliders. Assuming the new physics appears in the form of structure with characteristic energy scale at or above the masses of the electroweak gauge bosons, and assuming these new produced resonances decay back to Standard Model objects, it holds generically that the signal will appear as an excess of data in a particular exclusive final state at large summed scalar transverse momentum relative to Standard Model and instrumental backgrounds. Using a background estimate obtained from Vista@CDF, the first global quasi-model-independent search at a frontier energy hadron-hadron collider has been obtained on 1 fb^-1 of Tevatron Run II data with Sleuth@CDF. This quasi-model-independent search represents one of the most encompassing tests of the Standard Model at the energy frontier to date.

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