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Top Quark Precision Physics at Linear Colliders

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The future precision studies of the Standard Model require excellent knowledge of the top quark mass, to an accuracy of 100 MeV or better. A threshold scan in e+e- annihilation enables a precise measurement in theoretically well-defined mass schemes. The measurement requires a combination of precise QCD calculations, excellent detection efficiency and recognition of top quark events, and excellent control of the initial beam energy and profile. Above the production threshold, the efficient identification to top pair events combined with polarized beams provides the potential to extract the form factors for the top quark couplings with high precision and in a model-independent way, resulting in excellent sensitivity to physics beyond the standard model. We will provide an overview of top physics at linear colliders based on results from full-simulation studies of top quark pair production in the detectors proposed for ILC and CLIC.

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