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Measuring Proton Spin Polarizabilities with Polarized Compton Scattering

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Philippe Paul Martel, *University of Massachusetts - Amherst*

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First Advisor
Rory Miskimen

Second Advisor
Barry Holstein

Third Advisor
David Kawall

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Abstract
Polarized nuclear Compton scattering on a proton target provides a test of low energy QCD. The beam-target asymmetries of a circularly polarized Bremsstrahlung photon beam on a transversely polarized butanol target (σ_{2x}) and on a longitudinally polarized butanol target (σ_{2z}), and the beam asymmetry of a linearly polarized Bremsstrahlung beam on an unpolarized hydrogen target (σ_3) are sensitive to the proton spin polarizabilities, third order terms in the energy expansion of the Compton scattering amplitude. This experiment consisted of the σ_{2x} measurement, both just below and above two-pion threshold.

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