

# Exploring Non-Supersymmetric New Physics in Polarized Moeller Scattering

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We study in an effective operator approach how the effects of new physics from various scenarios that contain an extra  $Z'$  neutral gauge boson or doubly charged scalars, can affect and thus be tested by the precision polarized Moeller scattering experiments. We give Wilson coefficients for various classes of generic models, and we deduce constraints on the parameter space of the relevant coupling constants or mixing angles from the results of the SLAC E158 experiment where applicable. We give also constraints projected from the upcoming 1 ppb JLAB experiment. In the scenario where the extra  $Z'$  is light ( $M_{Z'} \ll M_W$ ), we obtain further constraints on the parameter space using the BNL  $g - 2$  result where it is useful. We find that the BNL deviation from the Standard Model cannot be attributed to a light extra  $Z'$  neutral gauge boson.

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