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Search for New Physics: Dark Vector Boson

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Based on the simple U'(1) extension of Standard Model (SM), we have used Dark Vector boson kinetic and mass mixings to generate the new beyond the SM extension: dark photon and Z'bosons. Both dark photon and Z' have different masses and couplings to the original SM particles defined by the set of mixing parameters. In addition, Z'boson have parity -violating nature and could be used as candidate for physics beyond the SM in precision electroweak searches. Comparing the theoretical predictions and the experimental data, we made exclusion plots to determine possible allowed region of masses and mixing parameters for these new particles. Our calculations have been completed up to one-loop level with dark photon or Z'participating in Moller scattering or electron-positron collisions. We also plan to include a discussion of possible SU(2)'SM extension in order to study strong CP violation in electron-positron collisions. The talk will give detailed analysis of the impact of dark photon and Z'on the observables of the proposed Moller and Belle II experiments.

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