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B-L Miracle as gauged PQ symmetry

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The Peccei-Quinn (PQ) solution to the strong CP problem requires an anomalous global $U(1)$ symmetry, the PQ symmetry. The origin of such a convenient global symmetry is quite puzzling from the theoretical point of view in many aspects. In this talk, we propose a simple prescription which provides an origin of the PQ symmetry. There, the global $U(1)$ PQ symmetry is virtually embedded in a gauged $U(1)$ PQ symmetry. Due to its simplicity, this mechanism can be implemented in many conventional models with the PQ symmetry. Finally, we also propose an attractive concrete model, where a gauged $U(1)$ PQ symmetry corresponds to the B-L gauge symmetry.

Parallel Session

Formal Field Theory and Strings

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