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Spacetime-Symmetry Violations: Motivations, Phenomenology, and Tests

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An important open question in fundamental physics concerns the nature of spacetime at distance scales associated with the Planck length. The widespread belief that probing such distances necessitates Planck-energy particles has impeded phenomenological and experimental research in this context. However, it has been realized that various theoretical approaches to underlying physics can accommodate Planck-scale violations of spacetime symmetries. This talk surveys the motivations for spacetime-symmetry research, the SME test framework, and experimental efforts in this field.

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