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Probing New Physics at future e⁺e⁻ colliders with two-particle angular correlations

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Long-range angular correlations between particles could reveal physics beyond the Standard Model, such as Hidden Valley (HV) scenarios. Our emphasis is on a hidden QCD-like sector, where the emergence of HV matter alongside QCD partonic cascades could amplify and extend azimuthal correlations among final-state particles.

Our study at the detector level focuses on the detectability of these signals at future lepton colliders, offering a cleaner experimental environment compared to the Large Hadron Collider (LHC). Notably, the identification of ridge structures in the two-particle correlation function may hint the presence of new physics.

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