Whispers from the Dark Universe - Particles & Fields in the Gravitational Wave Era



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Kinetic Theory in space-time dependent background and a simple recipe for calculating CP-Violating Sources for Electroweak Baryogenesis

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A persistent issue in electroweak baryogenesis calculations is the significant disparity in predictions yielded by different approaches, with variations spanning several orders of magnitude. In this study, we examine a system comprising two fermion flavours, proposing the existence of two sources of CP-violating. The semiclassical force and a new resonantly enhanced mixing source can be derived from the collisionless Kadanoff-Baym equation. The two sources are derived using the semiclassical approximation and the VEV insertion approximation. A Higgsino-Bino toy model shows that the new resonantly enhanced mixing source generates orders of magnitude higher asymmetry yield than the flavour diagonal semiclassical force.

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