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## Baryogenesis with the non-adiabatic Berry phase

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The geometric phase (Pancharatnam-Berry phase) results from the geometrical properties of the parameter space of the Hamiltonian. In this paper, we show that the non-adiabatic Berry phase can generate the effective chemical potential, which can bias the matter and the antimatter number densities without introducing the derivative coupling of the field. Our scenario is consistent with the Legendre transformation and gives the Hamiltonian in the expected form. The mechanism can be extended to more complex situations, which gives a natural but non-trivial extension of the spontaneous baryogenesis scenario.

### Parallel Session

Cosmology and Gravitational Waves

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