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Measuring CP violating phase in B Baryon decays

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One of the outstanding problems in physics is to explain the baryon-anti-baryon asymmetry observed in nature. According to the well-known Sakharov criterion for explaining the observed baryon-anti-baryon asymmetry, it is essential that CP violation exist in the baryon sector. However, CP violation has only been observed in mesons decays and is yet to be convincingly demonstrated in baryons decays. A critical test of the standard model (SM) goes beyond just observing CP violation in baryons and requires that it be measured in baryon decays as well, in order to verify that it agrees with that measured in the meson decays. In this letter we propose a new method to measure CP violating phase in b-baryons, using interference arising implicitly due to Bose symmetry considerations of the decaying amplitudes.

Primary authors: DESHPANDE, Nilendra (University of Oregon); SINHA, Rahul (The Institute of Mathematical Sciences); ROY, Shibasis

Presenter: SINHA, Rahul (The Institute of Mathematical Sciences)

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