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Search for Direct CP Violation in Hyperon Decays.
NICOLAS LEROS, University of Lausanne, Switzerland — The Fermilab *HyperCP* experiment has accumulated the world's largest sample of Ξ^- and $\overline{\Xi}^+$ hyperon decays, within two running periods in 1997 and 1999. The primary goal of the experiment is to search for direct CP violation in the decay sequences $\Xi^- \rightarrow \Lambda\ \pi^- \rightarrow p\ \pi^-\ \pi^-$ and $\overline{\Xi}^+ \rightarrow \overline{\Lambda}\ \pi^+ \rightarrow \overline{p}\ \pi^+\ \pi^+$. A violation of CP would manifest itself by a difference between the angular distribution of the proton and the antiproton in the Λ and $\overline{\Lambda}$ helicity rest frame. The amount of data is enough to reach a statistical sensitivity of 1.2×10^{-4} in the CP violating asymmetry $\mathcal{A}_{\Xi\Lambda}$ $= (\alpha_{\Xi}\ \alpha_{\Lambda}\ -\ \alpha_{\overline{\Xi}}\ \alpha_{\overline{\Lambda}})/(\alpha_{\Xi}\ \alpha_{\Lambda}\ +\ \alpha_{\overline{\Xi}}\ \alpha_{\overline{\Lambda}})$. We present an analysis method used to take into account the slight differences in the production of the Ξ^- and $\overline{\Xi}^+$ samples. A preliminary result on $\mathcal{A}_{\Xi\Lambda}$ at the level of a few 10^{-3} and based on a few percent of the 1997 data will be presented.

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