Results from the *HyperCP* Experiment at Fermilab

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The Fermilab *HyperCP* collaboration has built an extremetly high rate spectrometer which is being used to make high-statistics studies of charged hyperons and kaons. The data taking ended in January 2000, the experiment having collected over 250 *billion* events. We will highlight some of the physics being done with this enormous data sample focusing on the primary goal of the experiment: the search for direct CP violation in Ξ^- and $\overline{\Xi}^+$ decays. This search is being done by comparing the proton angular distribution in $\Xi^- \to \Lambda\pi^- \to p\pi^-\pi^-$ decays to that in the conjugate $\overline{\Xi}^+ \to \overline{\Lambda}\pi^+ \to \overline{p}\pi^+\pi^+$ decays, the CP violating observable being $A_{\Xi\Lambda} = (\alpha_\Xi\alpha_\Lambda - \alpha_{\overline{\Xi}}\alpha_{\overline{\Lambda}})/(\alpha_\Xi\alpha_\Lambda + \alpha_{\overline{\Xi}}\alpha_{\overline{\Lambda}})$. A preliminary study on this CP asymmetry based on a few percent of the data will be presented: the ultimate goal of the experiment is a sensitivity in $A_{\Xi\Lambda}$ of 2×10^{-4}.