Measurement of the β_Ξ and γ_Ξ Decay Parameters of $\Xi^- \to \Lambda\pi^-$

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Based on a total sample of 132 million polarized Ξ^- decays collected by the *HyperCP* experiment performed at Fermilab, we report a high-precision measurement of the β_Ξ and γ_Ξ decay parameters of $\Xi^- \to \Lambda\pi^-$ and the measurement of the polarization of Ξ^- produced from 800-GeV/c protons incident on a copper target. A preliminary result of the strong phase-shift difference and its implications on the CP-violating asymmetry in the $\Xi - \Lambda$ decay sequence will be presented.