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Search for the Flavor-Changing Neutral Current Decay $D^0 \to \mu^+\mu^-$ EDMUND BERRY, University of Chicago, CDF COLLABORATION — We report on a search for the flavor-changing neutral current decay $D^0 \to \mu^+\mu^-$ in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV using 330 pb^{-1} of data collected by the CDF experiment at the Fermilab Tevatron Collider. A displaced-track trigger selects long-lived D^0 candidates in the $D^0 \to \mu^+\mu^-$ search channel. The kinematically similar decay mode $D^0 \to \pi^+\pi^-$ is used for normalization, and the $D^0 \to K^-\pi^+$ channel is utilized to optimize the selection criteria in an unbiased manner. This analysis is an extension of a previous search using 65 pb^{-1} of data, when a limit was set on the branching fraction $\mathcal{B}(D^0 \to \mu^+\mu^-) < 2.5 \times 10^{-6}$ at the 90% Confidence Level.

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