Search for the decay $D$ to $\mu\mu$ at CDF Run II

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 $pp$-$\bar{p}$ 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 $D^0$ to $\pi^+\pi^-$ channel is used for normalization, and the Cabbibo-favored $D^0$ to $K\pi^+$ channel is used 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, $B(D^0 \rightarrow \mu^+\mu^-)$ less than $2.5 \times 10^{-6}$ at the 90 percent confidence level.