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D^0 Mixing and Doubly Cabibbo Suppressed Decay

CLEO ANTHONY, Cortland Community College — The CLEO collaboration reported observation of the 'wrong sign' decay $D^0 \to K^+\pi^-$ in 1993. Since then, upgrades have been made to the CLEO detector, including installation of a silicon vertex detector, which provide substantial improvements in sensitivity to $D^0 \to K^+\pi^-$, as well as to the decay modes $D^0 \to K^+\pi^-\pi^0$, and $D^0 \to X\ell^-\nu$. The vertex detector enables the reconstruction of the proper lifetime of the D^0, and so provides sensitivity to D^0–$\overline{D}^0$ mixing as the origin of the decay modes enumerated. Using data from the nearly $8\,\mathrm{fb}^{-1}$ of integrated luminosity that has been accumulated with the upgrades in place, we will give preliminary results on the rate of 'wrong sign' decay and D^0–$\overline{D}^0$ mixing. In addition, we will give preliminary results on the rates of on-shell D^0–$\overline{D}^0$ mixing and CP violation, derived from measurement of the lifetime and asymmetry measured with decays of the D^0 to CP eigenstates such as K^+K^-, $\pi^+\pi^-$, and $K_S\phi$.

- [X] Prefer Oral Session
- [ ] Prefer Poster Session

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