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Measurement of CP Asymmetries in $D^0 \to h^+h^-$ Decays with the CDF Detector ANGELO DI CANTO, INFN and University of Pisa, CDF COLLABORATION — The CDF experiment has now collected more than 4 fb^{-1} of data and has access to the largest samples of $D^{*+} \to D^0\pi^+$ decays currently available where D^0 decays as $D^0 \to h^+h^-$ (with $h = K$ or π). Measurements of decay rates in these channels are sensitive to CP violation and flavor mixing in the charm sector but require a careful analysis to separate signals from one another and from the background with the needed accuracy. We use a multivariate likelihood fit that combines kinematic and particle identification information to accurately determine the composition of the sample in terms of Cabibbo-favored, Cabibbo-suppressed and doubly-Cabibbo-suppressed decays. We apply this technique to a precision measurement of direct CP violating asymmetries in $D^0 \to \pi^+\pi^-$ and $D^0 \to K^+K^-$ decays.

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