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Lifetime Difference and CP Asymmetry in the $B_s^0 \to J/\psi\phi$ Mode KHALDOUN MAKHOUL, MIT, CDF COLLABORATION — We report on the progress of the analysis of $B_s^0 \to J/\psi\phi$ decays to extract the parameters $\Delta\Gamma_s/\Gamma_s$ and $\sin 2\beta_s$ using 1.4 fb^{-1} of data taken with the CDF II detector. The use of a time-dependent angular analysis can separate the CP eigenstates of the B_s^0 meson to determine their separate lifetimes. Further tagging of the B_s^0 meson at time $t = 0$ as B_s^0 or $\bar{B}_s^0$, allows for the analysis of the CP asymmetry, which then yields the $\sin 2\beta_s$ parameter. The $\Delta\Gamma_s$ measurement is an improved analysis using additional data, neural network selection for better signal/background, and reduced systematic errors. The $\sin 2\beta_s$ measurement is the first such analysis at CDF.

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