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CP violation studies in the B0s system at D0

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We have performed searches for CP violation in the B0_s system using data samples with 5-6.8 fbˆ{-1} of proton-antiproton collisions collected with the D0 detector in Run II at the Fermilab Tevatron. We discuss results from a search in a sample of B0_s −>muˆ+Dˆ-_sX decays, where CP violation effects appear as a difference in the decay-time distribution for B0_s −> anti-B0_s oscillated states versus that for anti-{B}0_s −> B0_s. We also report an improved measurement of the CP-violating phase phi_s, of the decay width difference for the two mass eigenstates \Delta Gamma_s, of the mean B0_s lifetime $\overline tau_s, and of magnitudes of the decay amplitudes, from the flavor-tagged decay B_s0 −> J/psi phi. Finally we combine these results with the measurement of the branching ratio for the decay B0_s −> Dˆ{()+}_s Dˆ{()-}_s and the measurement of the like-sign asymmetry for semileptonic b decays.

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