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Studies of D_s decays at Babar

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We present a measurement of the absolute branching fraction $\text{Br}(D_s \rightarrow \mu \nu_\mu)$ and $\text{Br}(D_s \rightarrow \tau \nu_\tau)$ and of the D_s decay constant, f_{D_s} , using 521 fb⁻¹ of data collected by the BABAR detector at the PEP-II storage rings at SLAC. We also obtained an upper limit on $\text{Br}(D_s \rightarrow e \nu_e)$. D_s events are detected by reconstructing the recoiling system, $D K X \gamma$, in events of the type $e^+e^- \rightarrow D K X D_s$, where $D_s \rightarrow D_s \gamma$ and X represents additional pions from fragmentation. We also perform a Dalitz plot analysis of $\sim 10^5$ $D_{s^+} \rightarrow K^+ K^- \pi^+$ decays. Events are selected from continuum e^+e^- annihilations using 384 fb⁻¹ of data collected with the BaBar detector at PEP-II. A model-independent partial wave analysis is performed in the low K^+K^- mass region which allows to extract the S and P-wave amplitudes and their relative phase. We also measure relative branching fractions of $D_{s^+} \rightarrow K^+ K^- K^+$ and $D_{s^+} \rightarrow K^+ K^+ \pi^-$.

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