ABSTRACT

Study of the Branching Ratio for the Decay
$B^0 \rightarrow \pi^0\pi^0\pi^0$

An upper limit at the 90% confidence level for the branching ratio of the rare three-body charmless decay $B^0 \rightarrow \pi^0\pi^0\pi^0$ is presented. The analysis uses data collected from the more than three billion e^+ e^- collisions at SLAC's asymmetric B Factory that is operating at the $\Upsilon(4S)$ ressonance energy. The result of these collsions is data on over two-hundred million $B^0\overline{B}^0$ decays. This data has been collected by the *BABAR* detector and has been intitally analyzed using *BABAR* software. The value of $\mathcal{B}(B^0 \rightarrow \pi^0\pi^0\pi^0)$, previously unmeasured, is found to be less than 1.56×10^{-6} at the 90% confidence level.