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**Measurement of $CP$-violating asymmetries in $B^0 \to (\rho\pi)^0$ using a time-dependent Dalitz-plot analysis of the** BABAR TOMONARI MIYASHITA, Stanford University, BABAR COLLABORATION — A measurement of $CP$-violating asymmetries is performed in the mode $B^0 \to \pi^+\pi^-\pi^0$ where the decay mode is dominated by intermediate $\rho \to \pi\pi$ resonances. The use of a full time-dependent Dalitz plot analysis allows sensitivity to the interference effects caused by the relative strong and weak phases in the regions where the $\rho^+$, $\rho^-$, and $\rho^0$ resonances overlap. This feature of the analysis makes possible the unambiguous extraction of the strong and weak phases as well as the $CP$-violating parameter $\alpha \equiv \arg[-V_{\rm td}V_{\rm tb}^*/V_{\rm ud}V_{\rm ub}^*]$ (where the $V_{qq'}$ are components of the CKM quark mixing matrix). A precision measurement of $\alpha$ serves to further test the Standard Model and constrain new physics. The analysis is performed using a sample of 431 fb$^{-1}$ of data corresponding to $471 \times 10^6$ $B\overline{B}$ meson pairs collected at the $\Upsilon(4S)$ resonances by the BABAR experiment using the PEP-II asymmetric-energy $e^+e^-$ collider at the SLAC National Accelerator Laboratory.

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