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Time-dependent analysis of $B^0 \rightarrow \rho^0 \rho^0$ decays LOIC ESTEVE, Centre d'Etudes Nucleaires, Saclay, BABAR COLLABORATION — We study the decay $B^0 \rightarrow \rho^0 \rho^0$ in a sample of about 454 million $\Upsilon(4S) \rightarrow B\bar{B}$ decays collected with the Babar detector at the PEP-II asymmetric-energy e^+e^- collider at SLAC. We measure the branching fraction and longitudinal polarization fraction. We investigate the proper-time dependence of the longitudinal component in the decay and measure the CP -violating coefficients S_L^{00} and C_L^{00} , corresponding to the sine and cosine terms in the time evolution of the CP asymmetry. We study the implication of these results for the CKM unitarity angle α .

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