



## Study of dimuon final states in the decay of B and Y mesons.

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We present the observation of a narrow mass state decaying into  $Y(1s)+\text{photon}$ , where the  $Y(1s)$  is detected by its decay into a pair of oppositely charged muons and the photon is identified through its conversion into an electron-positron pair. The significance of this observation is 5.6 standard deviation. The mass of the state is centered at  $10.551 \pm 0.014(\text{stat}) \pm 0.017 \text{ GeV}$ , which is consistent with that of the state recently observed by the ATLAS Collaboration. We also present an update of the search for the decay  $B_0 \rightarrow \mu^+ \mu^-$  using the full D0 data sample of about  $10.4 \text{ fb}^{-1}$  of integrated luminosity. In this analysis, backgrounds have been significantly reduced compared to earlier D0 measurements by addition isolation variables, by reconstructing additional vertices near the  $B_0$ s decay vertex and by employing multivariate techniques to discriminate between signal and background.

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