

A SEARCH FOR LARGE EXTRA SPATIAL DIMENSIONS AND Z' BOSONS
IN THE DIMUON FINAL STATE IN $\sqrt{s} = 1.96$ TeV $p\bar{p}$ COLLISIONS AT DØ

Abstract

by

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Searches for large extra spatial dimensions (LED) and extra neutral gauge bosons (Z') in the dimuon channel are presented. Both of these searches are performed on 170 ± 11 pb⁻¹ of data collected at Fermilab's upgraded DØ detector which studies $p\bar{p}$ interactions at a center-of-mass energy of 1.96 TeV. Although no LED or Z' signals are seen, 95% confidence level limits are found in both cases. In the search for LED agreement between Standard Model backgrounds and data is shown in the dimuon mass versus $\cos(\theta^*)$ spectrums. For the LED analysis a lower 95% confidence level limit of $M_S > 1.0$ TeV (GRW) is obtained. In the search for Z' the measured high p_T dimuon mass distribution agrees with the the predictions from the Standard Model. This Z' analysis finds and sets a lower 95% confidence level mass limit of $M_{Z'} > 690$ GeV (SSM).