

Abstract Submitted  
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**Evidence for a  $U(1)_{B-L}$  Gauge Interaction in  $\nu$  Oscillation Anomalies**<sup>1</sup> NETTA ENGELHARDT, Brandeis University — The recent short baseline neutrino experiments LSND and MiniBooNE exhibit an anomalous behavior unexplained by the standard theory of neutrino oscillations. The experiments indicate that neutrino oscillation probability depends on the both the energy scale and the chirality of the neutrinos concerned, and are consistent with the  $U(1)_{B-L}$  gauge interaction model with 6 neutrinos and 3+2 mixing proposed by Nelson. This paper will present a minimalistic 3+1 mixing described by the same model. A numerical analysis shows that the 3+1 mixing model provides an improved explanation for the LSND and MiniBooNE anomalies over the standard theory of neutrino oscillation. This model is moreover in good agreement with the long baseline data from MINOS.

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Netta Engelhardt  
Brandeis University

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