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Sterile Neutrinos in a 6x6 Matrix[1] T. GOLDMAN, Los Alamos National Laboratory, B.H.J. MCKELLAR, University of Melbourne, G.J. STEPHENSON, JR., University of New Mexico — An early study of neutrino mixing within the see-saw framework considered random mass matrices in what is now known as the sterile sector[1]. The mixing angles in the lepton sector were found to be closely distributed about the CKM angles that were assumed. In that work, rank 3 was assumed for the weak isospin zero Majorana mass matrix in the sterile neutrino sector. We report here on the character of new results using a reduced rank ("singular") sterile matrix. We find that an additional flavor misalignment in the sterile sector can produce several interesting effects, including: 1) mass eigenstates that lead to very large flavor mixing among active neutrinos, and 2) small values for the 1-3 mixing angle parameter[2]. We also discuss the limits that current observations place on the mass scale of light sterile neutrinos in this model. [1]T. Goldman and G. J. Stephenson, Jr., "How Large Are the Neutrino Mixing Angles?" *Phys. Rev. D* **24**, 236 (1981). [2]G. J. Stephenson, Jr. , T. Goldman, B. H. J. McKellar and M. Garbutt, "Large Mixing from Small: Pseudo-Dirac Neutrinos and the Singular Seesaw," *Int. J.Mod.Phys.***A20** (2005) 6373; [hep-ph/0404015].

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