

Abstract Submitted  
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**Distinguishing DSNB signal from atmospheric neutrino backgrounds in Super-Kamiokande and future SK-Gd**<sup>1</sup> BEI ZHOU, JOHN BEACOM, Ohio State Univ - Columbus — Detection of the diffuse supernova neutrino background (DSNB) is of great importance, which will greatly help the understanding of both core-collapse physics and neutrino physics. However, after tens of years' effort of Super-Kamiokande (SK), DSNB is still hidden in the remaining backgrounds, dominated by decay electrons from invisible muons induced by atmospheric  $\nu_\mu$  and prompt electrons from atmospheric  $\nu_e$  interactions. In this work we explore the underlying physics of the dominant backgrounds and propose new detection methods for DSNB observation, for both current SK and future SK-Gd, which has the neutron-tagging ability. These methods, if adopted by SK, will greatly improve the detectability of DSNB.

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