

Abstract Submitted  
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**$\nu_e - {}^{16}\text{O}$  Interactions in Super-Kamiokande With Low Energy Atmospheric Neutrinos** BARAN BODUR, KATE SCHOLBERG, Duke University, SUPER KAMIOKANDE COLLABORATION — Charged current quasi-elastic scattering of electron neutrinos below 100 MeV from  ${}^{16}\text{O}$  nucleus is not yet observed, despite being a major component of the atmospheric neutrino signal at low energies. This channel is an important background for diffuse supernova neutrino background searches (DSNB) with inverse beta decay process in water Cherenkov detectors, an additional  $\nu_e$  detection channel in case of a supernova burst, and a possible way to probe atmospheric neutrinos at low energies that will be a background for the future WIMP dark matter searches. A study for the first observation of this interaction with 20 years of Super-Kamiokande data is currently underway. We estimate about 60 signal events in the fiducial volume of Super-Kamiokande experiment and identify  $\bar{\nu}_e - {}^{16}\text{O}$  and inverse beta decay interactions from atmospheric and DSNB neutrinos as major backgrounds. We will present estimated signal and background rates, methodology and current progress of the search.

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