The SuperK-Gd project is the approved upgrade of the Super-Kamiokande (SK) detector in order to enable it to efficiently (> 80%) detect thermal neutrons by dissolving 0.2% of gadolinium sulphate (Gd₂SO₄) into its water. This ability has also significant advantages in the analysis of high energy (> 10^6 MeV) neutrinos in SK, namely atmospheric and long baseline neutrinos.

Here we present the improvements due to the use of the tagged final state neutrons in the separation of the interacting neutrinos and antineutrinos, the distinction between Neutral Current and Charged Current neutrino interactions, and the neutrino energy reconstruction.

We study the impact of those features on both, atmospheric and long baseline neutrino oscillation analyses.