

Abstract

The puzzle about neutrino masses was unsolved for almost 60 years until the 1998 Super-Kamiokande experiment gave a strong evidence for neutrino oscillations and consequently the existence of neutrino masses. Also, the diminish for neutrino detection was completely explained because neutrinos which have mass always oscillate. The goal of this thesis is to calculate the oscillation probabilities for neutrinos traversing the earth, assuming the three-flavor oscillation frameworks. We present the oscillation probabilities for different incident Nadir angles and the neutrino mixing angle θ_{13} . Our analysis is useful for studying the density profile of the earth.

