Neutrinos - key particles for our understanding of the smallest particles and the largest Universe -

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Neutrinos - key particles for our understanding of the smallest particles and the largest Universe - Neutrinos are remarkably interesting particles. Neutrinos have three types, i.e., electron-neutrinos, muon-neutrinos and tau-neutrinos. They have no electric charge, exceptionally small mass and interact with matter very rarely. Because of the last nature, neutrinos can easily pass through even the Earth or the stars. One can study the interior of stars by detecting neutrinos from these stars, although the detection of neutrinos is difficult. More than 20 years ago, neutrinos were found to have tiny mass. I will discuss the studies of neutrinos focusing on our studies that have been carried out in Kamioka, Japan. As described above, neutrinos are interesting particles. Particle physics had a significant progress over the previous ~100 years. Neutrinos played important roles in the progress. Finally, it should be mentioned that there is a serious possibility that neutrinos with tiny mass might be the key to understand the origin of the matter in the Universe [21]. Neutrino physicists around the world are challenging this big question in the Universe. Neutrinos might be the key particles for our understanding of the smallest particles and the largest Universe. Abstract extracted from the full paper