学位論文要旨

Study of Three Generation Seesaw Model with Dirac Mass Matrix of Four-zero Texture and CP Violation in Neutrino Sector
(Dirac 質量行列における 4-0 テクスチャーを用いた 3 世代シーソー模型とニュートリノ セクターにおける CP 対称性の破れ)

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We introduce the four-zero texture models on the neutrino Dirac mass matrix and suggest a classification for those textures to investigate the number of non-zero neutrino mass eigenvalues and the presence of CP violation in the neutrino sector. Four-zero texture model on the Dirac mass matrix includes seven model parameters in the contex of type-I seesaw mechanism. This number of model parameters is less than that of the general description of the Majorana mass matrix with three right-handed Majorana neutrinos; three neutrino mass eigenvalues, three mixing angles and three CP violating phases. The efficient method is proposed to perform the numerical analysis for four-zero texture models. We show some results of the numerical calculations as for correlations among model parameters, neutrino mass eigenvalues and CP violating phases. These correlations can be explained by the relations arising from the elements of the effective Majorana mass matrix with four-zero texture. The position of a non-zero element on the effective Majorana mass matrix, which is associated with the classification for four-zero textures, fixes the constraints among parameters. The Majorana mass matrix all of whose elements are non-vanishing also produce other relations particularly in the case of four-zero textures.