

## The 3-3-1 Models and Implication to Astroparticle Physics

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We study two versions of 3-3-1 model. The minimal 3-3-1 model behaved as the simple 3-3-1 model with the replication of  $\eta$  or of  $\chi$  can provide realistic dark matter candidates. The relic density is figured out as a function of the dark matter mass by using micrOMEGAs package. In addition, the 3-3-1 model with neutral fermions can be extended into 3-3-1-1 model by considering the lepton number as a local symmetry. We show that the 3-3-1-1 model can generate inflation as well as explain the baryon asymmetry of the Universe successfully.

**Primary author:** Ms THUY, Nguyen Thi (Yonsei Univ.)

**Presenter:** Ms THUY, Nguyen Thi (Yonsei Univ.)

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