Contribution ID: **25** Type: **Oral talk**

Rotating neutron star in strong magnetic fields and the MR relations

Monday, 24 June 2019 12:15 (25 minutes)

Neutron stars are highly magnetized rotating compact stars. In 2010, a neutron star named PSR J1614-2230 has a mass of twice the solar mass ($1.97\pm0.04M\odot$). In 2013, a neutron star named PSR J0348+0432 with a mass of $2.01\pm0.04M\odot$ was observed. Such massive neutron stars give strong constraints on the equation of state (EoS) of neutron star matter. In this study, we calculate radius of a neutron star using a perturbative prescription for various EoSs and relations of its total mass increased by magnetic fields. Also, we calculate the radius of the neutron star as a function of its total mass increased by rotation. As for the EoS, we use RMF theory. Moreover, we calculate mass-radius (MR) relation with both rotation and magnetic fields using 5 hadronic EoSs. We have the results of MR relation with both rotation and magnetic fields have the total mass of over twice the solar mass for all 5 hadronic EoSs.

Primary author: Ms WATANABE, Chinatsu (Saitama University)

Presenter: Ms WATANABE, Chinatsu (Saitama University)

Session Classification: Session 2