

U054-039

Room: Ocean B

Time: May 16 9:00-9:10

Tutorial:Origin of cosmic magnetic field

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This is a tutorial lecture on the origin of cosmic magnetic field. The purpose of the subsession is to introduce all the topics related to the origin of cosmic magnetic field. The following five topics are registered in this subsession: the origin of large scale cosmic magnetic field due to quantum fluctuation of electro-magnetic field during very early universe, the origin of galactic and galaxy cluster scales magnetic field due to photon-plasma interactions during the decoupling period of the universe, the origin of galaxy cluster scale magnetic field due to the plasma instability in the shock waves associated with formation of galaxy clusters, the origin of galaxy cluster scale magnetic field due to the plasma instability when the plasma has a temperature gradient, recent progresses of theoretical studies on the fundamental processes of the plasma and the generation of the magnetic field in the astronomical shock waves and its applications to supernova remnants and gamma-ray bursts. Interestingly, Japanese young researchers have been done original works about all fives topics within a last few years. Therefore, we could invite an unique speaker on each topic who has done original works recently. Especially, the work related to the fifth topic listed in above is an out-standing works which has dramatically progressed our understanding on the physical processes of the plasma in the astronomical shock waves. We are happy to invite this lecture as an invited talk in this subsession.