The Conference on Particles and Cosmology will be held at the Nanyang Executive Centre from 5 to 9 March 2018 at NTU, Singapore.

About 14 billion years ago our Universe was created by a big explosion, the “Big Bang”. In this explosion the matter in our Universe as well as space and time were created. The matter was a plasma of quarks, gluons, photons, electrons and neutrinos. The dynamics of those particles is described by the Standard Theory of Particle Physics. Thus Cosmology and Particle Physics are strongly correlated. New discoveries in Particle Physics, e.g. the discovery of the masses of the neutrinos, change Cosmology, and new discoveries in Cosmology, e.g. the dark matter or dark energy in the Universe, will be important for Particle Physics.

The Standard Theory of Particle Physics describes very well the electroweak and the strong interactions, but it is still unclear, how the gravitational interaction can be included.

Important for Cosmology are the dark matter and the dark energy in the Universe. It is still unknown, what is behind the dark matter. It might be provided by a new neutral particle. Also it remains unclear, why there is a dark energy, which generates the acceleration of the expansion of our Universe. Important for Cosmology are in particular the neutrino masses, which might be Majorana masses. Thus far we do not understand the origin of the very small neutrino masses, the pattern of the lepton flavor mixing and the connection between the cosmological matter-antimatter asymmetry and the CP-violation.

These and related problems of Cosmology and Particle Physics will be discussed at the conference.

SPEAKERS

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