ICTP – Eurasian Centre for Advanced Research

COLLOQUIUM

Unveiling the fundamental laws of Nature

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Particle physics studies the elementary constituents of matter and their fundamental forces. Very short distances are explored by particle collisions at very high energies, creating conditions similar to those governing the Universe just after the Big Bang. Laws of Nature become then easier and can be described in terms of simple mathematical theories.

The current theory, called Standard Model, provides an accurate description of all known physical phenomena in the microcosmos and its last ingredient, needed to explain the origin of mass of elementary particles, was discovered at the Large Hadron Collider (LHC) at CERN in 2012. Particle physics is now entering into a new era of unexplored territories beyond our current understanding of Nature.

Among theoretical proposals, string theory unifies all known physical theories of fundamental interactions including gravity in a coherent framework and provides an exciting possibility for discovering new spectacular phenomena and Universe's hidden dimensions.

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10^{30} - 11^{30}

IZTECH Dept. of Mathematics