



International Centre for Theoretical Physics
South American Institute for Fundamental Research

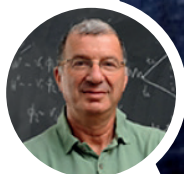
Campus of IFT-UNESP - São Paulo, Brasil



MIKHAIL SHAPOSHNIKOV
EPFL, Switzerland
Cosmology and evidences of matter-dominated Universe



THOMAS KONSTANDIN
DESY, Germany
Electroweak baryogenesis: models, calculations and experimental constraints



YOSSI NIR
Weizmann Inst., Israel
The Standard Model of particle physics, its extensions and the ingredients for baryogenesis



THOMAS HAMBYE
Brussels U., Belgium
Leptogenesis and neutrino mass



MIKKO LAINE
Bern U., Switzerland
Thermal field theory, phase transitions and thermal rates



IASON BALDES
ENS, France
Alternative mechanisms: Affleck-Dine, asymmetric dark matter

November 20 – December 1, 2023

SCHOOL ON ORIGIN OF MATTER DOMINATION IN THE UNIVERSE

The cosmic matter-antimatter asymmetry represents one of the main open puzzles in particle physics and cosmology. Since Andrei Sakharov identified in 1967 the necessary ingredients for baryogenesis, which is a mechanism to generate a cosmic matter-antimatter asymmetry, many exciting theoretical developments have taken place in the field.

This two-week school will introduce graduate students (and young researchers not familiar with this field) to topics related to baryogenesis. This is a rich field which involves cosmology, particle physics and some specific calculational techniques, such as finite-temperature field theory. The school will cover topics including basic cosmology of the early Universe, the observational evidences for the existence of a cosmological matter-antimatter asymmetry (big bang nucleosynthesis, cosmic microwave background), the standard model of particle physics and its extensions, ingredients and mechanisms for baryogenesis, ways to test the models (e.g. CP violation in electric dipole moment of electron/neutron, gravitational wave production from first order phase transition), calculational methods and more specialized topics which relate the puzzle of the origin of the matter-antimatter asymmetry to other open puzzles like neutrino mass and dark matter. Although the school focuses on topics related to baryogenesis, it will also cover basic topics in cosmology and particle physics pertaining to the early Universe that are important whether the participant aspires to work as a particle physicist, a cosmologist or both.

There is no registration fee and limited funds are available for travel and local expenses.

Application deadline: September 10, 2023

Online application and more information:
www.ictp-saifr.org/omdu2023



IFT - UNESP
INSTITUTO DE FÍSICA TEÓRICA

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