



# New Physics Beyond the Standard Model

**July 03 – 07, 2023      10:00 – 12:00 (GMT+2) Daily**  
**Zoom Meeting ID: 829 3644 2628      Passcode: 129611**

High Energy Physics has seen some landmark discoveries over the past few years. The observation of the long-elusive Higgs boson at the LHC, CERN, in 2012, and the first detection of the gravitational waves by the LIGO experiment in early 2016 are some of its recent crowning achievements. But despite these experimental breakthroughs, there are some phenomena in nature, such as the existence of dark matter and the baryon-antibaryon asymmetry of the Universe, to name just two, any theoretical explanation for which is still not backed by experimental evidence. The theoretical HEP community across the globe has, therefore, doubled up its efforts in pursuit of answers to all these open questions, which has resulted in a multitude of new physics models and frameworks being proposed.

This short lecture series by **Prof. Shaaban Khalil**, Director of Centre for Fundamental Physics, Zewail City of Science and Technology (ZCST), Giza – Egypt, is designed to serve as a pre-conference programme to DSU 2023, being hosted by the EAI FR in the following week. It aims to introduce the younger participants of the conference to some of the most prominent of the new physics frameworks.

## Topics covered:

1. The Standard Model and directions beyond it
2. A simple  $U(1)$  extension of the SM, and the Two-Higgs-Doublet model
3.  $SU(5)$  Grand Unified Theory
4. Supersymmetry
5. Extra dimensions



*Lectures will take place in the seminar room of the ICTP-EAI FR, located on the top floor of the Einstein Block, Nyarugenge Campus, University of Rwanda, and can be attended remotely via Zoom.*

There is no attendance fee, but participants are requested to reserve their place in advance by contacting Dr. Shoaib Munir (smunir@eaifr.org) due to the limited number of seats.