

Title of the course:

Beyond the Standard Model (SM) of Elementary Particles

Topics:

- Supersymmetry with emphasis on the Minimal Supersymmetric Standard Model (MSSM) and its minimalistic extension
- Dark matter: Candidates, detection techniques and bounds
- Baryogenesis
- Higgs physics: Production and decay within the SM and multi-Higgs models
- Recent developments in neutrino physics
- Grand Unified Theories (GUTs)*
- Little Higgs model*
- Big bang nucleosynthesis*
- Large Extra Dimension models

Description and goals of the course and the evaluation procedure:

The aim of this course is to familiarize the students with open questions and different research interests in the field and prepare them to embark on their research work. The topics marked with * will be covered by students as their course work. The evaluation will be based on the exam testing their knowledge on the topics without the * mark and the presentation that they are supposed to prepare on one of the topics marked by *.

Timing: Sundays 9-11 am

The course will also have a weekly session for solving exercises. These sessions are as important as the lectures themselves. The timing will be fixed after receiving feedback from the participants.

The lectures are open to everybody who is interested. To formally register in the course, please contact npileroudi@mail.ipm.ir