**PhD Physics course at Bari University ( XXXIIICycle)**

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| **Title** | **Standard Model and Physics beyond the Standard Model** |
| **Proponent** | **Fulvia De Fazio** |
| **# CFU**  **(1 CFU = 8 hours)** | **2 CFU (16 h)** |
| **Schedule** | **To be agreed with the students** |
| **Brief Summary of the course** | **The course aims at providing a modern description of the Standard Model (SM) of electroweak interctions, together with several new Physics models, in connection with the most recent experimental results claiming for physics beyond the SM.** |
| **Programme** | **Standard Model**  **- Simmetries and Lagrangiandensity**  **- Spontaneous breaking of the electroweaksymmetry**  **- The Higgsboson and itsproperties**  **- Quark mixing and CP violation**  **- CKM matrix, determination of itselements and tests of the SM**  **Physicsbeyond the SM**  **- Reasons to look for physicsbeyond the SM**  **- New Physicsmodelsbased on exlargedgaugegroups**  **- Modelsintroducing extra-dimensions**  **- Basics of supersymmetry** |
| **Recommended texts** | **The Standard Model and Beyond, by Paul Langacker**  **Second Edition (Series in High Energy Physics, Cosmology and Gravitation)** |
| **Assessment methods** | **Seminar on a topicdiscussedwithin the course** |