

Colloqui della Classe di Scienze

Anno Accademico 2023/2024

Sala Stemmi
Palazzo della Carovana
Scuola Normale Superiore
Piazza dei Cavalieri, 7 - PISA

17 APRIL 2024
h 3.00 p.m.

GINO ISIDORI
University of Zurich, Switzerland

*The puzzle of elementary particle
masses*

ABSTRACT:

According to the current description of fundamental interactions the basic constituents of matter are three nearly identical copies of elementary particles called quarks and leptons. These three copies have identical properties under strong, weak and electromagnetic forces, but differ in their mass. Why we have these three copies and what is the origin of their different masses is one of the big open questions in particle physics. I will briefly review this problem, illustrating its central role in achieving a deeper understanding of fundamental interactions. I will also outline some recent theoretical ideas on how to address it, and briefly discuss how these ideas can be tested through current and future experiments at low and high energies.

