

CERN-EPFL-Korea Theory Institute "New Physics at the Intensity Frontier"

from 20 February 2017 to 3 March 2017

CERN

Europe/Zurich timezone

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TH secretariat

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The Standard Model of elementary particle physics has provided a consistent description of Nature's fundamental constituents and their interactions. Its predictions have been tested and confirmed by numerous experiments. The Large Hadron Collider's runs at 7 and 8 TeV culminated in the discovery of a Higgs boson-like particle with the mass of about 125 GeV -- the last critical Standard Model component.

However, it is clear that the Standard Model is not a complete theory. It fails to explain a number of observed phenomena in particle physics, astrophysics and cosmology. Some yet unknown particles or interactions would be needed to explain these puzzles.

It is possible that our inability to observe new particles lies in their extremely feeble interactions. If true, this would imply that experiments are needed to cross the "intensity frontier", rather than the "energy frontier".

The aim of the Theory Institute is to discuss theory and phenomenology of possible new physics at low energy scales that can be probed by new intensity frontier and precision experiments.

In March 2016 CERN management has announced creation of "Physics Beyond Colliders" Study Group with the mandate to "...explore opportunities offered by the CERN accelerator complex to address outstanding questions in particle physics through projects complementary to high-energy colliders". In particular, a newly proposed intensity frontier experiment **SHIP** (Search for Hidden Particles) is at the stage of producing Comprehensive Design Research during the next 3 years. At this stage the changes to the experimental design can still be made, in order to optimize or improve a potential reach of the experiment. This TH Institute will bring together theorists in order to help to maximize science output of this or similar experiments.

Theory Institute: “New Physics at the Intensity Frontier”

- ▶ Dates: February 20 – March 3, 2017
- ▶ Registration open till mid-December:
<https://indico.cern.ch/event/580599>
- ▶ Will host inside a one-day meeting of the **Physics Beyond Colliders** working groups (open to all participants)
- ▶ Organisers:
 - ▶ SHiP: A. Boyarsky, O. Ruchayskiy, M. Shaposhnikov, F. Tramontano + C. Grojean, J. Jaeckel, M. Pospelov
 - ▶ CERN: G. Giudice, A. Katz, M. Mccullough, S. Sibiryakov
 - ▶ Korea: S. Y. Choi, K. Y. Choi, H. M. Lee, H. S. Lee

Registrations

First Name	Last Name	Affiliation
Wolfgang	Altmannshofer	University of Cincinnati
Lars	Bergstrom	The Oskar Klein Centre, Dept. of ...
kfir	blum	weizmann
Celine	Boehm	Durham University
Alexey	Boyarsky	Leiden University (NL)
James	Cline	McGill University
Sacha	Davidson	Universite Claude Bernard-Lyon I ...
Bhupal	Dev	Washington University
Jonathan	Feng	University of California, Irvine
Claudia	Frugluele	Weizmann Institute
Juan	Garcia-Bellido	Universidad Autonoma de Madrid
Mark	Goodsell	LPTHE
Stefania	Gori	U. of Cincinnati
Thomas	Hambye	ULBrussels
Eder	Izaguirre	Brookhaven National Laboratory
Felix	Kahlhoefer	DESY
Alexander	Kusenko	UCLA and Kavli IPMU
Mikko	Laine	U. Bern
Leszek	Roszkowski	University of Sheffield (GB)
Oleg	Ruchayskiy	University of Copenhagen (DK)
Brian	Shuve	SLAC National Accelerator Labora...
Igor	Tkachev	Institute of Nuclear Research RAN