



GIACOMO CACCIAPAGLIA

From France to Sweden



Project: **Higgs Sector of the Standard Model of Particle Physics**

Research topic: **Physics**

Swedish Institution: **Chalmers University / Lund University**

French Institution: **CNRS – University Lyon I**

Dates of mobility: **12/05/2017 to 20/05/2017**

Program: **SFVE-A (ex-TOR)**



PRESENTATION

[Giacomo Cacciapaglia](#) is a [CNRS](#) Researcher affiliated with the National Institute of Nuclear and Particle Physics ([IN2P3](#)). His main interests are applying theoretical methods to problems in particle physics. He works on the phenomenology of new physics models at current and future colliders (e.g., vector-like quarks). He builds models for composite Higgs models, dark matter and extra dimensions. Following the COVID-19 pandemic, he is interested in applying theoretical physics methods to study epidemic spreading.

ACTIVITIES IN SWEDEN

The main subjects of discussion at [Chalmers University](#) in Göteborg were the phenomenology of composite models of the Higgs sector of the Standard Model of Particles and the [CERN LHC](#) in Geneva. Giacomo Cacciapaglia had fruitful discussions with [Prof. Gabriele Ferretti](#) from Chalmers University that concluded the necessity of an unprecedented testing of the presence of a light scalar that decays into two tau leptons. He held a seminar on Composite Dark Matter and the Higgs, attended by around 15 students, researchers and professors. During the second part of the mobility, in Lund, Cacciapaglia exchanged views with [Dr. Hugo Serôdio](#) and [Prof. Roman Pasechnik](#) from [Lund University](#) about fundamental models that lead to a composite sector behind the Higgs sector, where Prof. Pasechnik shared his expertise on the trinification model applied to the composite models of the Higgs particle. He held a second seminar on the “composite Higgses” in front of ten professors and researchers.

On top of that, they approached the possibility to create a more developed and inclusive collaboration between their groups, publishing jointly, and establishing co-tutoring PhD programmes. Three different research projects were born during the mobility, collaborations with (1) Dr. Serôdio, [Prof. Sung-Joon Lee](#) ([Korea University](#)); (2) with Prof. Ferretti, Dr. Serôdio, [Dr. Thomas Flacke](#) ([KIAS](#)) and colleagues from [ATLAS in Uppsala](#) and [CMS in Lyon](#); (3) and with Prof. Pasechnik and Dr. Serôdio.