



**JOAKIM GRADIN**

*From France to Sweden*



Project: **Heavy charged Higgs boson searches and hardware track trigger**

Research topic: **Physics**

Swedish Institution: **Uppsala University**

French Institution: **University Grenoble Alpes**

Dates of mobility: **19/05/2015 to 23/05/2015**

Program: **SFVE-A (ex-ÖMSE)**

## PRESENTATION

[Joakim Gradin](#) was a “co-tutelle” PhD student 2013-2017 at Uppsala University ([UU](#)) and the University Grenoble Alpes ([UGA](#)), co-supervised by Prof. [Johann Collot](#) (UGA), Senior Lecturer [Elin Bergeås Kuutmann](#) (UU) and Prof. [Arnaud Ferrari](#), and additionally coordinated by Prof. [Richard Brenner](#) (UU) and [Annick Lleres](#) (Laboratory of Subatomic Physics and Cosmology [LPSC](#) Grenoble). He has been interested in particle physics, in particular design and performance studies of a track trigger for the High Luminosity [LHC](#) (Large Hadron Collider) and the analysis and detector development with the [ATLAS experiment](#) at [CERN](#) in Geneva for his thesis focusing on the search of a heavy charged Higgs boson, following the [2012 discovery](#) of the particle and Higgs field, 50 years after its theoretical suggestion.

## ACTIVITIES IN SWEDEN

Gradin travelled to Uppsala alongside his supervisor Prof. Collot to Gradin meet with his three supervisors and discuss the progress of his PhD, and to attend the [thesis defense of Alexander Madsen](#), who was also co-supervised by professors from Uppsala and Grenoble and whose thesis subject was close to Gradin’s, on charged Higgs boson searches at the LHC. They had the opportunity to meet with [Albert de Roeck](#) (CERN) and [Suzanne Gascon Shotkin](#) ([Lab IP2I](#) at [University Claude Bernard Lyon I](#)) in conjunction with the defense, and to visit the [Laboratory Ångström](#) at UU. They all participate in a research collaboration aimed at the search of a charged Higgs boson with the experimental help of the ATLAS detector at CERN in Geneva, also supported by the International Program of Scientific Collaboration (PICS) between UU, [KTH](#) Royal Institute of Technology, LPSC Grenoble and the Laboratory of the Linear Accelerator [LAL Orsay](#).

Gradin picks up the baton from Madsen’s work, infirming the existence of a charged Higgs boson up to a mass of about 180 GeV/c<sup>2</sup>. Gradin aims to discover the characteristics of the charged Higgs boson at superior masses.