

Chomont Arthur

Education

Academic Qualifications

- **University Clermont Auvergne** **Clermont-Ferrand, France**
Ph.D in Particle Physics *October 2014-September 2017*
Thesis subject: Study of Yukawa coupling of top quark to Higgs boson in ATLAS
Thesis Advisor: Djamel Boumediene
- **University Clermont Auvergne** **Clermont-Ferrand, France**
Master in Particle Physics *2012-2014*

Research activities

ATLAS Tile calorimeter (Thesis)

- **Calibration of the Tile Calorimeter** **2014-2017**
 - Calibration of the hadronic calorimeter of ATLAS using a laser system. Development of an algorithm to automatize the calibration and to diagnose unstable channels. Control of quality of the data in the TileCal (shifts) as DQValidator and DQLeader (1 month).

ATLAS $t\bar{t}H$ search in multilepton final state analysis (Thesis)

- **Master 2 Internship (5 months)** **Spring 2014**
 - Feasibility study for searching of $t\bar{t}H$ production in final state with two same-sign leptons.
- **Responsibilities in the analysis of partial and full ATLAS 2015/2016 dataset (PhD)** **2014-2017**
 - Estimation of background with mis-identification of the charge of an electron in channel with two same-sign leptons through data-driven method (Likelihood).
 - Responsible for combined fit of all multilepton channels, using TRExFitter package (profile likelihood fit).
 - Participation in combination of all $t\bar{t}H$ analysis in ATLAS.
- **Responsibilities in the analysis of 2015 and mid-2016 ATLAS data (13.2 fb^{-1})** **2014-2016**
 - Estimation of background with non-prompt leptons in the two same-sign lepton channels through data-driven method (Fake Factor method).
- **Other contributions to analysis of full 2015/2016 ATLAS data (36.1 fb^{-1})** **2016-2017**
 - Cross-check categorisation analysis for channel with two same-sign leptons and 0 τ_{had} .
 - Study on $t\bar{t}$ semileptonic event reconstruction through kinematic fit to separate events with prompt and non-prompt leptons.

ATLAS $V(H \rightarrow b\bar{b})$ search (Postdoc at LAL Orsay)

- **Contributions in the analysis of 2015 to 2017 ATLAS data (79.9 fb^{-1})** **2017-2018**

- Modelling studies in 0 and 2 leptons channels forward estimation of theoretical uncertainties
- Participation in statistical work through realisation of cross-check and short studies

○ **Contribution in STXS analysis for $V(H \rightarrow b\bar{b})$ with full 2015-2017 data (79.9 fb^{-1})** **2018**

- Splitting and production of inputs in the 2 leptons channel for Simplified Template Cross Section analysis
- Statistical study towards STXS measurement

ATLAS $t\bar{t}H$ search in multilepton final state analysis (PostDoc INFN at Roma 1)

○ **Postdoc INFN at Roma 1** **November 2018-November 2020**

- Study of channel with two same-sign leptons and one hadronic tau. Study of partial reconstruction of the events to improve rejection of instrumental background.

ATLAS $t\bar{t}W$ measurement in multilepton final state analysis (PostDoc INFN at Roma 1)

○ **Postdoc INFN at Roma 1** **November 2018-November 2020**

- Study of channel with two same-sign leptons. Estimation of non-prompt leptons background through data-driven method (matrix method).

Other activities

- **Teaching:**
2015-2017 : Practical work on Optic and Electromagnetism for first year Bachelor student
2015-2017 : Seminars on nuclear physics for third year bachelor student
- **Outreach:** 2015-2016 : Presentation of ATLAS experiment to highschool students (MasterClass)
- **Master student supervision:** Supervision of 5 months internship for Master student H.Ouriagli

Conference/Public Talk

- Conference: **Evidence for Higgs boson production in association with a top quark pair** : International Workshop on Deep Inelastic Scattering 2018, April 2018, Kobe, Japan
- Conference: **Charge mis-identification determination in the 2 leptons same-sign channel of $t\bar{t}H \rightarrow \text{leptons}$ and combination of all $t\bar{t}H \rightarrow \text{leptons}$ channels with ATLAS** : Higgs Hunting 2017, July 2017, Paris, France
- Workshop: **Recent results on $t\bar{t}H$ in the multilepton channels** : Top LHC France 2017, May 2017, Marseille, France
- ATLAS Workshop: **$t\bar{t}H$ Multilepton: Overview and Fit** : Workshop Physics ATLAS France 2017, March 2017, Vogue, France
- Seminar: **Direct search for Yukawa coupling of Higgs boson to top quark in ATLAS experiment**: LPC Clermont Seminar, November 2016, France
- Conference: **ATLAS Tile Calorimeter calibration and monitoring systems**: CALOR 2016, May 2016, Daegu, South Korea