Vincenzo Battista

Ph.D. in Physics

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Personal details

Date of birth	December 14, 1989
Place of birth	Larino (Campobasso), Italy
Citizenship	Italian

Education

2014-2018 **Ph.D. in Physics**, *EPFL*, Lausanne.
Thesis: "Measurement of time–dependent CP violation in $B^0 \to D^{\mp}\pi^{\pm}$ decays and optimisation of flavour tagging algorithms at LHCb"
Supervisors: Prof. O Schneider (EPFL), Dr. C. Fitzpatrick (EPFL)

2011-2014 **MS.c. in Physics**, *University of Ferrara*, Italy, *Grade: 110/110 cum laude*.
Thesis: "A Study of Semileptonic B Decays in Orbitally Excited D Mesons at LHCb"
Supervisor: Dr. C. Bozzi (INFN Ferrara)

2008-2011 **BS.c. in Physics**, *University of Ferrara*, Italy, *Grade: 110/110 cum laude*.
Thesis: "Studio dei parametri caratteristici di dispositivi optoelettronici per il rivelatore di muoni dell'esperimento SuperB"
Supervisors: Prof. R. Calabrese (University of Ferrara), Dr. W. Baldini (INFN Ferrara), Dr. G. Cibinetto (INFN Ferrara)

Selected publications

LHCb collaboration, R. Aaij *et al.*, *Measurement of CP violation in $B^0 \to D^{\mp}\pi^{\pm}$ decays*, JHEP **06** (2018) 084, arXiv:1805.03448 [hep-ex]

LHCb collaboration, R. Aaij *et al.*, *Measurement of CP asymmetry in $B_s^0 \to D_s^{\mp}K^{\pm}$ decays*, JHEP **03** (2018) 059, arXiv:1712.07428 [hep-ex]

V. Battista, *b-flavour tagging in pp collisions at LHCb*, Il Nuovo Cimento **C4** (2016), 10.1393/ncc/i2016-16335-5

V. Battista *et al.*, *A study of spillover clusters and ghost tracks in the Silicon Tracker with 25 ns bunch spacing*, CERN-LHCb-INT-2016-010 (2016)

Teaching assistantship

2014-2017 Laboratory of nuclear physics, exercises on nuclear and particle physics (EPFL)

2012 Exercises on general physics, data analysis and programming (University of Ferrara)

Scholarships

Summer 2012 CERN Summer Student Programme
Calibration of silicon-based sensors for the monitoring of the radiation field in the LHCb cavern
Supervisors: Dr. G. Corti (CERN), Dr. M. Karacson (CERN)

Summer 2011 DOE/INFN Summer Exchange Program, SLAC
Optimisation of the selection of $D_s^{+*} \to D_s^+(\to \mu^+\nu_\mu)\gamma$ decays using simulated events for the BaBar experiment
Supervisor: Dr. M. Convery (SLAC)

Research activity

CP violation measurements with B^0 and B_s^0 decays

I performed measurements of the CKM angle γ with time-dependent analyses of $B^0 \to D^\mp\pi^\pm$ and $B_s^0 \to D_s^\mp K^\pm$ using data collected with the LHCb detector. The result obtained with $B^0 \to D^\mp\pi^\pm$ is more precise than previous measurements from BaBar and Belle collaborations. The analysis of $B_s^0 \to D_s^\mp K^\pm$ is the first measurement of γ using B_s^0 decays.

Flavour tagging algorithms

I implemented and optimised flavour tagging algorithms used by the LHCb collaboration to infer the flavour of neutral B mesons for time-dependent analyses.

Silicon Tracker

I was responsible for the calibration and the maintenance of the Silicon Tracker detector of LHCb.

Talks at conferences

Apr 2018 *Incontri di Fisica delle Alte Energie*, Milano,
"Misure di violazione di CP in decadimenti $B^0 \to D^\mp\pi^\pm$ a LHCb"

Aug 2017 *CHIPP & Swiss Physical Society Meeting*, Geneva
"Flavour tagging in pp collisions at LHCb"

May 2017 *Technology and Instrumentation in Particle Physics*, Beijing
"Operation of the LHCb silicon tracking and vertexing systems in LHC Run-2"

Feb 2017 *Lake Louise Winter Institute*, Lake Louise
"CP violation in B decays at LHCb"

Aug 2016 *CHIPP Annual Plenary Meeting*, Lugano
"Time-dependent measurement of CP violation in $B^0 \to D^-\pi^+$ decays at LHCb"

Mar 2016 *Les Rencontres de Physique de la Vallee d'Aoste*, La Thuile
"b-flavour tagging in pp collisions at LHCb"

Apr 2015 *Incontri di Fisica delle Alte Energie*, Roma,
"Violazione di CP e misura di $|V_{ub}|$ tramite decadimenti semileptonici di adroni B a LHCb"

Software skills

C, C++, Python, Linux shell, ROOT, RooFit, TMVA, Matlab, Mathematica, Keras, scikit-learn, MySQL, Tableau, LaTeX

Languages

English (fluent, C2), French (advanced, B2) and Italian (mother tongue)

Science outreach

2016 Collaboration to the organisation of the "EPFL Open Days". An exhibit of simple experiments was organised for the general public in order to explain the principles of particle physics and detectors.

2015-2016 Collaboration with an italian science popularisation journal (*Quaderni di scienza e scienziati molisani*).