

CURRICULUM VITAE

-

MARCEL VOS

Phone: +34 96 354 3853 (work)
+34 658796485 (mobile)

Email: marcel.vos@ific.uv.es
marcel.vos@cern.ch

IFIC (U.Valencia/CSIC) Valencia
c/ Catedrático José Beltrán 2
E-46980, Paterna
Valencia, Spain

PERSONAL DATA

Name and surname: Marcel Vos
Birth date/place/nationality: 7-10-1972/Doom (NL)/Dutch
Marital status: happily married, two children (18 and 16)

EDUCATION

Ph.D. Experimental particle physics **October 2003**
Universiteit Twente, The Netherlands
Thesis: “The ATLAS inner tracker and the detection of light supersymmetric Higgs bosons”
Supervisors: prof. dr. ir. B. van Eijk (U. Twente/NIKHEF), dr. J.A. Fuster (IFIC Valencia)

Master experimental physics **June 1996**
Utrecht University, The Netherlands
Master’s thesis: “A neural-network based approach towards photon identification in the WA93 lead-glass calorimeter”
Supervisor: prof. dr. A. Buijs

Secondary education **June 1991**
Almere College, Kampen, The Netherlands
Preparatory scientific education (Dutch VWO) focused on natural sciences

RESEARCH EXPERIENCE

Permanent staff research position **2014-today**
“Científico titular” of the Spanish research council CSIC at IFIC Valencia

Ramón y Cajal tenure-track fellowship **2008-2014**
Tenure-track position CSIC at IFIC Valencia 2009-2014
Research fellowship University of Valencia 2008-2009

Jae-DOC post-doctoral fellowship **2007-2008**
Post-doctoral grant of the Spanish research council CSIC, IFIC Valencia

Research grant under EU 5th framework project **2003-2006**
Istituto Nazionale di Fisica Nucleare, sezione di Pisa

PhD grant at IFIC Valencia **1998-2003**

SCIENTIFIC TRAJECTORY

Over the last two decades, I have gained experience in all major areas of experimental particle physics, with contributions spanning from instrumentation to data analysis and phenomenological studies.

I have made important contributions to the R&D and construction of tracking systems based on silicon detectors, developing the radiation-hard silicon micro-strip sensors for the ATLAS inner detector, assembling the CMS inner silicon tracker and developing next-generation pixel detectors for future electron-positron colliders. I am deeply involved in the projects for a linear electron-positron collider at the energy frontier.

My contribution to the analysis of LHC data has focused on top-quark and jet physics, where I have developed and deployed novel experimental techniques for boosted objects and new methods to measure top quark properties. I have published extensively on the phenomenology of the LHC and have made important contributions to studies of the scientific potential of future colliders.

Over the years, I have had a chance to take on several leadership roles at the institute and national level, in major international experimental collaborations and in the European projects AIDA and AIDAinnova. Currently, I coordinate the ATLAS top physics working group and the Spanish network for future colliders. I have been part of several review committees and have chaired the evaluation of the CEPC Conceptual Design Report.

RESEARCH INTERESTS

My activity during a scientific associate position at CERN will be focused first and foremost on the exploitation of LHC data. As convener of the ATLAS top physics working group (from October '20 until October '22) I will coordinate the analysis of the data collected in 2015-2018 and prepare the experiment for run 3 of the LHC. A concerted effort on the key tools – new experimental methods and techniques, calibration and performance of the experimental apparatus and more advanced Monte Carlo generator models - is required to continue to make progress in the LHC top physics programme. I intend to make an important contribution in ATLAS and the LHC top Working Group to more advanced interpretations of the LHC data, in particular in the framework of the Standard Model Effective Field Theory. I firmly believe that a research associate position at CERN will greatly enhance my connection to the ATLAS and CMS experiments, the LHC working groups and to the global theory community, and hence enhance my effectiveness as top group convener.

At the same time, I will continue to help build the future of global high energy physics, with contributions to future collider projects at CERN and elsewhere, and in particular to a future Higgs factory. During my period at CERN I will collaborate with the detector R&D groups and AIDAinnova on advanced integrated, transparent silicon sensors. The vicinity of the future collider groups and the theory department will enable new prospect studies into the scientific potential of future colliders. As coordinator of the Spanish network for future colliders, I intend to enhance the collaboration of the Spanish HEP community with the CERN accelerator and detector R&D programs and to maximize our contribution to the effort on the design of the Higgs factory experiment and scientific programme.

I am convinced that an extended period based at CERN will be very beneficial to intensify the existing links and collaborations between CERN, IFIC (UV/CSIC) and the Spanish HEP community.

RESEARCH EXPERIENCE - RESPONSIBILITIES

ATLAS

Convener of the top quark physics group	2020-2022
IP of the ATLAS/future colliders group at IFIC	2015-2019
Convener of Boosted Objects group	2010-2012
Convener of Exotics/Jet+X group	2008-2010

Future colliders

Detector R&D convener, ILC-International Development Team	2021-now
Coordinator of the Spanish network for future colliders	2018-now
ILD jet physics coordinator	2016-now
ILD vertex detector convener	2016-now
CLICdp speakers committee	2016

Instrumentation

ECFA detector R&D panel	2021-now
Work Package leader AIDAinnova	2020-now
Technical board DEPFET collaboration	2012-2016
DEPFET contact to Linear Colliders	2012-2016
Work Package Leader of EU FP7 project AIDA	2011-2015
Test beam coordinator of the DEPFET collaboration	2007-2012

CMS – 2003-2006

Coordinator validation tests of the Tracker Inner Barrel of CMS	2005–2006
Responsible development HLT b- and τ -streams	2004–2006
Editor HLT b-tagging section physics TDR	2005
Responsible tracker objects in Event Data Model	2006

ATLAS tracker

Analysis ATLAS SCT test beam	1999-2003
------------------------------	-----------

TEACHING AND SUPERVISION

Supervision of students		
Ph.D. Theses*	5	U. Valencia '11,'13,'16,'16,'20 +4 further ongoing Ph.D. projects
Master's theses	6	5 U.Valencia, 1 U. Tohoku, Japan
Bachelor's theses	4	U.Valencia, 3 physics, 1 engineering
Practical stages	2	U.Valencia. 1 physics, 1 engineering
Ph.D. committees	5	DESY/U. Hamburg '20, CEA/U. Paris '20, U. Valencia '20, '12, LAL/U. Paris Sud '14, U. Glasgow '14, U. Autonoma Barcelona '10

*M. Villaplana was awarded the physics Ph.D. prize of the University of Valencia in 2013. Former students C. Mariñas and M. Villaplana have recently re-incorporated at IFIC as tenure-track researchers.

Lectures at international schools

ECT* online lecture for “strong interactions at LHC and future colliders”, 2020

Top physics at lepton colliders, Linear Collider school, Germany, 2016

Boosted objects, Cargèse school, France, 2015

Top physics, Taller de Altas Energías, Benasque, 2013

ATLAS Physics, XV int'l meeting on fundamental physics, Benasque, 2012

PUBLICATIONS

Publication record with a large number of large-impact results by experimental collaborations and a substantial number of publications with a shorter author list.

Summary of publication numbers – from INSPIRE HEP database.		
Total number of publications:		1118 (1008 published)
Publications with 100+ citations:		346
Impact factor (h-index):		169
Publications by experimental collaborations		
Experiment	Years	#
ATLAS	2006-today	1002
Belle 2	2016-today	11
ILC	2006-today	11
CLIC	2012-today	7
DEPFET	2006-today	8
CMS tracker	2003-2006	15
ATLAS tracker	1998-2003	11
WA98	1996-1997	10
Publications with a short author list, independent of experimental collaborations		
Phenomenology	-	17
Conference	-	57

- ATLAS
- instrumentation
- phenomenology
- future projects
- conference

Selected publications - books & review papers:

Author of the review paper:

Jet substructure at the LHC: experimental review, Rev.Mod.Phys. **91** (2019) 4,045003 (112 cit.)

Editor of conference proceedings for ECT* “strong interactions” workshop 2017 & 2019:

Strong dynamics for physics within and beyond the SM[...], Frascati Phys. Ser. **70** (2019)

Old and new strong interactions from LHC to Future Colliders, Frascati Phys. Ser. **65** (2017)

Editor of the successful BOOST2012 and BOOST2010 reports:

Boosted objects and jet substructure at the LHC, EPJC **74** (2014) 3, 2792 (170 cit.)

Boosted objects: a probe of BSM physics, EPJC **71** (2011) 1661 (311 cit.)

Selected Publications – ATLAS

ATLAS (M.V. paper editor & group coordinator, supervision Ph.D. J. Aparisi),
In situ calibration of large-radius jet energy and mass in 13 TeV pp collisions [...],
EPJC 79 (2019) 2,135 (57 cit.)

ATLAS (M.V. paper editor, method developed entirely at IFIC in EPJC 73 (2013) 2438),
Determination of the top-quark pole mass using $tt+1$ -jet events collected [...] in 7 TeV [...]
JHEP 10 (2015) 121 (93 cit.)

ATLAS collaboration (M.V. editor & group coordinator, supervision Ph.D. M. Villaplana) ,
Measurement of jet mass and substructure for inclusive jets in 7 TeV collisions at the LHC,
JHEP **1205** (2012) 128 (214 cit.)

Selected reports on collider phenomenology

Ph. Bambade et al. (32 authors, M.V. editor top physics section),
The International Linear Collider: a global project,
arXiv:1903.01629 (110 cit.)

H. Abramowicz et al. (117 authors, M.V. contributed top EFT and mass analysis)
Top-quark physics at the CLIC electron-positron collider,
JHEP 11 (2019) 003 (68 cit.)

G. Durieux et al. (7 authors, M.V. conception and coordination) ,
The electro-weak couplings of the top and bottom quarks – global fit and future prospects,
JHEP **12** (2019) 098 (26 cit.)

M. Boronat et al. (6 authors, M.V. conception, execution and paper editor),
Jet reconstruction at high-energy electron-positron colliders,
EPJC 78 (2018) 2, 144 (29 cit.)

S. Alioli et al. (7 authors),
A new observable to measure the top-quark mass at hadron colliders,
EPJC 73 (2013) 2438 (104 cit.)

Selected Publications – instrumentation

DEPFET collaboration (M.V. main author),
DEPFET active pixel detectors for a future linear $e^+ e^-$ collider,
IEEE Trans. Nucl. Sc. **60** (2013) 1457 (32 cit.)

CMS collaboration (M.V. contributions on High Level Trigger and Tracker),
CMS Technical Design Report,
J. Phys. G. **34** (2007) 6 (1617 cit.)

ATLAS SCT collaboration (M.V. coordinator test beam analysis),
Beam tests of ATLAS SCT silicon strip detector modules,
Nucl. Instr. Meth. **A538** (2005) 348-407 (51 cit.)

PRESENTATIONS AND SEMINARS (SELECTION)

Summary and plenary talks at international conferences:

Strong interactions at the LHC and beyond, ECT* online colloquium 2020, Trento, Italy
Top mass, plenary talk for ATLAS+CMS, LHCp 2018, Bologna, Italy
Top physics at future colliders, keynote talk, EPS-HEP2017, Venice, Italy
Tracking and vertex detectors, plenary talk LCWS17, Strasbourg, France
Top physics at future colliders, keynote talk TOP2016,
Top and Higgs physics, summary LCWS16, Morioka, Japan
Top physics review, ECFA LC2016, Santander, Spain
CLIC overview, CLIC2016 workshop, CERN, Switzerland
vertexing and tracking, LCWS11, Granada, Spain

Oral presentations on behalf of the ATLAS and CMS collaborations (selection):

LHCP, Bologna (IT) 2018
TOP2015, Ischia (IT) 2015
ICHEP, Melbourne (Aus), 2012
TIME05, Zurich (CH), 2005
PLHC, Prague, Czech Republic, 2003

Instrumentation (DEPFET/CMS/ATLAS):

VERTEX contributions in '16, '13, '09, '06
IEEE NSS-MIC, Dresden, Germany, 2009
TIME05, Zurich (CH) 2005
Large-scale Silicon, Florence (IT) 2000
Hiroshima Symposium, Hiroshima (JP) 1999

Individual contributions to conferences/workshops:

Numerous contributions to phenomenology workshops, including several contributions to:
Galileo Galilei Institute in Florence ('16, '18)
BOOST workshops ('11, '13, '14),
Les Houches (BSM '07 and '09)
Invited contributions to theory workshops by MIAPP ('14), Perimeter Institute ('12),
Heidelberg U. ('11), etc.

Seminars:

U. Kyoto ('18), KEK ('18), University College London ('16), U. Bristol ('16),
U. Cambridge ('16), U. Bonn ('16), U. Tohoku ('16), U. Vienna ('14), U. Glasgow ('14),
U. Chicago ('14), U. Michigan ('14), U. Barcelona ('14), CERN-TH ('10, '12),
NIKHEF ('08, '12), IFIC Valencia ('06), INFN Pisa ('03), UC Louvain-la-neuve ('03)

ORGANIZATION OF SCIENTIFIC EVENTS

Local organizing committee:

Linear Collider Workshop (online)	2021
forum of tracking detector mechanics (chair)	2018
VERTEX 2017 in Asturias	2017
top physics at the linear collider, LCTOP15 (chair)	2015
BOOST2012 (chair)	2012

Scientific and international committees

BOOST conference series	2010-2020
ECT* workshop strong interactions	2017-2020
Int'l meeting on fundamental physics	2020
CEPC workshop	2019-2020
LC top workshops	2014-2020
ATLAS b-tagging workshop	2008

Session convener at international conferences:

ICHEP 2020 (online), discussion session strong interactions	2020
BOOST2020 (online), future colliders	2020
LCWS19 (Sendai, JP), physics and detectors	2019
CEPC workshop (Rome, IT), panel discussion	2018
AWLC2017 (SLAC, US), top/QCD/loopverein	2017
LCWS16 (Morioka, JP), top physics and QCD	2016
VERTEX16, detectors in design and construction	2016
ECFA-LC16, tracking and vertexing	2016
BOOST2015 (Chicago, US) expert panel	2015
LCWS15, top/QCD/loopverein	2015
ALCW2015 (Tsukuba, JP), tracking/vertexing	2015
AWLC2014 (FNAL, US), vertexing/tracking	2014
Snowmass 2013, top mass	2013
VERTEX2013, (Munich, DE), running experiments	2013
LCWS13 (Tokyo, JP), tracking/vertexing	2013
ECFA2013 (DESY, DE), top physics	2013
BOOST2010 (Oxford, UK), hadronic final states	2010
LC2010 (CERN), tracking/vertexing,	2010
LCWS10 (Beijing, CN), tracking/vertexing,	2010
ECFA2008 (Warsaw PL), tracking/vertexing	2008

PEER REVIEW

Experimental projects:

chair of the review committee for the CEPC conceptual design report, Beijing 2018
member of the review committee of the CMS timing detector, CERN 2019

ATLAS collaboration (2010-today):

Editorial board chair: 13
Editorial board member: 21
Final sign-off reader o.b.o. spokesperson: 2

Future colliders:

Referee for several analyses included in the ILD Interim Design Report (2020)
Internal referee for the CLIC top physics paper (2019)
Internal referee for the detailed ILD Baseline Design (2013)

International journals:

Refereed papers for several journals, among which Physical Rev. D., Sensors and Actuators, Nucl.Instrum.Meth., Proceedings of Science

Conferences:

Abstract reviews for IEEE NSS/MIC (2015-2020)
Referee for proceedings of Hiroshima symposium (2014-2016-2020), VERTEX (2017) and ECT* QCD workshop Trento (2017, 2019)

Scientific proposals for funding agencies:

Reviewed scientific projects for science funding agencies (FWF Austria, NWO the Netherlands, FWO Belgium, Argentina, CONACYT Mexico).

STAYS IN INTERNATIONAL CENTERS

CERN, 1 month project associate collaboration with CLIC detector and physics, 2019
KEK and U. Tokyo, 1 month funded by EU project E-JADE for collaboration on ILC, 2018
CERN, 2 months (1 month project associate) LCD group for contribution to CLIC CDR, 2010
CERN, frequent 2-3 week periods for SCT beam tests, 1999-2002
KEK, 1 month for beam tests of SCT prototypes, 2001
CERN, 1 month for WA98 data taking, 1999-2002
TEI Heraklion, 3 months Erasmus, 1996

LANGUAGES

Dutch: native speaker

English: fluent, written and spoken, ample writing experience

Spanish: fluent, written and spoken

Italian: fluent, written and spoken

German: intermediate knowledge

French: basic knowledge

Catalan: basic knowledge

PROJECTS AND FUNDING

Coordinator of the Spanish network for future colliders	2018-now
Coordinator (co-IP) of ATLAS and future colliders project at IFIC	2016-2019
Responsible (IP) AIDAInnova at IFIC	2021-now
Coordinator AIDAInnova WP10	
Responsible (IP) for IFIC involvement in Belle 2	2016-2019
Responsible (IP) for IFIC involvement in CLICdp	2010-2020
Responsible (IP) AIDA2020 at IFIC	2015-2019
Responsible (IP) AIDA at IFIC	2011-2015
Coordinator AIDA WP9 (EU budget: 2.4 million euros)	
Chair of the local committee for TopLC15 (funding: 20.000 euros)	2015
Chair of the local committee for BOOST2012 (funding: 40.000 euros)	2012

OUTREACH

Organization of scientific colloquia:

Responsible from 2016 to 2021 for the “Severo Ochoa” colloquium series at IFIC in Valencia, organizing a total of 50 colloquia. The series is open to all research institutes of the Valencia science campus and to University students. It has attracted renowned experts from all areas of fundamental physics and beyond, including five Nobel prize winners.

Public presentations and outreach events (selection):

Public presentation in the “Museo de las ciencias” in Valencia by Barry Barish (2018)

Public presentation at Valencia University by Ignacio Cirac (2017)

Public presentation of the Higgs discovery in the “Fundación Bancaja” in Valencia (2012)

Articles for non-experts:

Investigación y Ciencia (Spanish edition Sc. American), April 2015

ILC newslines (May 2016, July 2013, February 2013)

Kennislink (Dutch popular science journal, June 2013)

CERN Courier (September 2012)