Jonathan DA SILVA

Curriculum Vitae

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Birth	December 23, 1987 - Perpignan, France.
Nationality	French.
Marital status	Single.

Skills

IT & Programming

Operating systems	GNU/Linux, Mac OS X, Microsoft Windows	General tools	LaTeX, Microsoft Office, MobaXterm, ROOT, Maple, Mathematica, GIMP, Plot Digitizer
Scripting - Programming	C, Fortran, Python, C++, Script Shell (Bash, bsh), HTML5/CSS3, FLTK	Text editors	Geany, Komodo Edit, Emacs, gedit, vi/vim, Notepad++, Visual Studio 2013, Code::Blocks, NEdit, KWrite, Kate, Bluefish, Texmaker, TextEdit
VCS	Git : Bash, Git Extensions, Bitbucket, IntelliJ IDEA, Beyond Compare, KDiff3. SVN, basics de Mercurial	Java (environnements, tools, frameworks)	Eclipse, IntelliJ IDEA, Java 8, JUnit, Cucumber, Mockito, Maven, Spring (Boot, Data JPA), Vert.x, REST, Swagger, SonarLint, Papyrus, Capella
Database, deployment	PostgreSQL, Liquibase, pgAdmin 4, SQL, Ansible	Project/ Requirements management	Jira, RMsis, Reqtify
Specialized softwares	Systema, LanHEP, CalcHEP, micrOMEGAs, NMSSMTools, HiggsBounds/HiggsSignals, Rivet, Herwig, Pythia, Lilith, SModelS, MadAnalysis 5, MadGraph5_aMC@NLO		

Languages

French	mother tongue	Portuguese	bilingual
English	fluent	Spanish	intermediate

Professional Experience

02/2017 - Present **Engineer**, *Sogeti High Tech*, Toulouse, France.

Java back-end developer as Thales Alenia Space contractor, Toulouse, France.

- Building of a microservice software in an Agile team (Scrum) using Java tools like Vert.x, Spring and Java 8 specificities on an Eclipse environment;
- Interactions with front-end using REST API and Swagger;
- Modelization using Papyrus and Capella;
- Unit tests with JUnit, acceptance tests with Cucumber;
- Database with PostgreSQL under pgAdmin 4, database schema changes application with Liquibase;
- Code quality with SonarLint under Eclipse/IntelliJ IDEA, SonarQube coupled with Jenkins for continuous integration;
- Git for VCS using Git Bash, Git Extensions, merge conflicts with IntelliJ IDEA, Beyond Compare and KDiff3, pull-requests with Bitbucket;
- Application deployment under SELinux platform with Ansible.

R&D engineer for Sogeti High Tech, Toulouse, France.
- Building of C++ Plugins using FLTK as HCI and tests on various platforms (Windows 10, Ubuntu and Raspbian) using SVN for VCS.

Space physics engineering as Airbus Defense & Space contractor, Toulouse, France.
- Outgassing, thruster, radiation analyses and thruster modelisation using especially Systema products.

11/2015 - 07/2016 **Postdoctoral Fellow**, *Laboratoire de Physique Subatomique et de Cosmologie (LPSC)*, Grenoble, France (Head of working group : Sabine KRAML).

Development of programming tools for high energy physics phenomenology community, in C, C++ and Fortran.
- Two co-authored articles, published in Physical Review D and Computer Physics Communications;
- One national conference contribution as speaker.

10/2013 - 09/2015 **Postdoctoral Fellow as a Marie Skłodowska-Curie early stage researcher**, *The University of Manchester*, MCnet network, United Kingdom.
Head of working group : Michael SEYMOUR.

Tested a major update of the particle physics Herwig Event Generator, written in C++. Finalized successfully the implementation of a particle physics model (UMSSM) in the public code micrOMEGAs (C, Fortran).
- Two co-authored articles, published in Journal of High Energy Physics and Journal of Cosmology and Astroparticle Physics;
- Three national and international conference contributions as speaker;
- Three presentations as seminars in scientific laboratories.

2011 - 2012 (6 months) **CMIRA 2011 EXPLO'RA DOC Fellow**, *Institute for Particle Physics Phenomenology (IPPP)*, Durham University, United Kingdom (Supervisor : Céline BŒHM).

Development of programming methods in C to efficiently cover and analyse the parameter space of particle physics models.
- Two co-authored articles published in Physical Review D;
- Two national conference contributions as speaker;
- Three presentations as seminars in scientific laboratories.

10/2010 - 09/2013 **CNRS Fellow**, *Laboratoire d'Annecy-le-Vieux de Physique Théorique (LAPTh)*, Université de Grenoble, France (Advisor : Geneviève BÉLANGER).

Implemented, tested and analysed successfully particle physics models using existing programming tools (mostly in C).
- Two co-authored articles, published in Journal of Cosmology and Astroparticle Physics;
- One workshop and one proceedings contribution;
- Seven national and international conference contributions as speaker;
- Two poster contributions at international schools in particle physics;
- Two presentations as seminars in scientific laboratories.

Education

10/2010 - 09/2013 **PhD in Theoretical Physics**, *Laboratoire d'Annecy-le-Vieux de Physique Théorique (LAPTh)*, Université de Grenoble, CNRS, France. Defended on july 3, 2013.

Thesis *Supersymmetric Dark Matter candidates in light of constraints from collider and astroparticle observables*, `tel-00912650`, [`arXiv:1312.0257`].

Advisor Geneviève BÉLANGER.

2010 **Master in Particle Physics and Cosmology**, *Université Montpellier 2*, France.

03 - 06/2010 **Second year Master intership**, *LAPTh*, France.

Title *Dark matter in an extension of the standard model*

Supervisor Geneviève BÉLANGER.

05 - 06/2009 **First year Master intership**, *Laboratoire de physique théorique et astroparticules*, *Université Montpellier 2*, France.

Title *Quarks model aud current algebra*

Supervisor Stephan NARISON.

2008 **Bachelor in Physics**, *Université Montpellier 2*, France.

2005 **High school diploma in sciences**, *Lycée François Arago*, Perpignan, France.

Teaching

2013 - 2015 Teaching assistant (2 hours per week of teaching during term time) at *The University of Manchester*, United Kingdom, for groups of five undergraduate students in second year BSc at the *School of Physics and Astronomy* :

Assessment of presentations : vacation essays.

Tutorials : Maths of Waves and Fields, Electromagnetism, Quantum Mechanics, Wave Optics, Thermal and Statistical Physics.

2010 - 2013 Teaching assistant (192 hours over 3 years) at the *IUT Annecy*, *Université de Savoie*, France, and more precisely at the departments *Génie Électrique et Informatique Industrielle* and *Génie Mécanique et Productique* for various groups of around 15 undergraduate students in first or second year of the BSc equivalent :

Tutorials : Classical Physics.

Labs and assessment of reports : Mechanics and Acoustics, Optics, Electricity.

Outreach

13/03/2015 Exhibitor at The Big Bang Fair 2015, The NEC Birmingham, United Kingdom.

2010 - 2012 Organization of local science event for general public "Fête de la Science", LAPTh, France.

Publications

8. D. Barducci, G. Bélanger, J. Bernon, F. Boudjema, J. Da Silva, S. Kraml, U. Laa and A. Pukhov, *Collider limits on new physics within micrOMEGAs_4.3*, Comput. Phys. Commun. 222 (2018) 327-338, [arXiv:1606.03834].
7. G. Bélanger, J. Da Silva and H. M. Tran, *Dark matter in U(1) extensions of the MSSM with gauge kinetic mixing*, Phys. Rev. D 95 (2017) 115017, [arXiv:1703.03275].
6. G. Bélanger, J. Da Silva, T. Perrillat-Bottonet and A. Pukhov, *Limits on dark matter proton scattering from neutrino telescopes using micrOMEGAs*, JCAP 12 (2015) 036, [arXiv:1507.07987].
5. G. Bélanger, J. Da Silva, U. Laa and A. Pukhov, *Probing U(1) extensions of the MSSM at the LHC Run I and in dark matter searches*, JHEP 09 (2015) 151, [arXiv:1505.06243].
4. C. Bœhm, J. Da Silva, A. Mazumdar and E. Pukartas, *Probing the Supersymmetric Inflaton and Dark Matter link via the CMB, LHC and XENON1T experiments*, Phys. Rev. D 87 (2013) 023529, [arXiv:1205.2815].
3. G. Bélanger, C. Bœhm, M. Cirelli, J. Da Silva and A. Pukhov, *PAMELA and FERMI-LAT limits on the neutralino-chargino mass degeneracy*, JCAP 11 (2012) 028, [arXiv:1208.5009].
2. D. Albornoz Vasquez, G. Bélanger, C. Bœhm, J. Da Silva, P. Richardson and C. Wymant, *The 125 GeV Higgs in the NMSSM in light of LHC results and astrophysics constraints*, Phys. Rev. D 86 (2012) 035023, [arXiv:1203.3446].

1. G. Bélanger, J. Da Silva, and A. Pukhov, *The Right-handed sneutrino as thermal dark matter in U(1) extensions of the MSSM*, JCAP 12 (2011) 014, [arXiv:1110.2414].

Workshop

G. Brooijmans, B. Gripaios, F. Moortgat, J. Santiago, P. Skands, *et al., Les Houches 2011: Physics at TeV Colliders New Physics Working Group Report*, arXiv:1203.1488.

Proceedings

J. Da Silva, *To connect supersymmetry and dark matter*, Contribution to the JRJC 2011 proceedings.

Other experience

21 - 26/07/2014 Secretary duties at the 22st International Conference on Supersymmetry and Unification of Fundamental Interactions, The University of Manchester, United Kingdom.

2012 Member of the editorial board of the International Europhysics Conference on High Energy Physics (HEP2011).

21 - 27/07/2011 Secretary duties in the Astroparticle Physics session of HEP2011, Grenoble, France.

2011 - 2012 Deputy Representative of PhD students from LAPP and LAPTh, France.

2007 Computing and internet certificate (C2i) – level 1, Université Montpellier 2, France.

2004 - 2010 Responsible of invoicing for the limited liability company "DA SILVA tiler", Baho, France.