

# Jonathan DA SILVA

## Curriculum Vitae

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in jonathan-da-silva

**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	L <sup>A</sup> T <sub>E</sub> X, Microsoft Office, MobaX-term, Jira, ROOT, Maple, Mathematica, GIMP, Plot Digitizer
Scripting - Programming	C, Fortran, Python, C++, Script Shell (Bash, bsh), HTML5/CSS3, FLTK, basics de SQL	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, KDiff3, IntelliJ IDEA, 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
Specialized softwares	Systema, LanHEP, CalcHEP, micrOMEGAs, NMSSMTools, HiggsBounds/HiggsSignals, Rivet, Herwig, Pythia, Lilith, SModelS, MadAnalysis 5, MadGraph5_aMC@NLO		

### Languages

French mother tongue

English fluent

Portuguese bilingual

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;
- 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 KDiff3 and IntelliJ IDEA, pull-requests with Bitbucket.

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 BÉHM).  
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 and 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. Boehm, 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. Boehm, 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. Boehm, 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.

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## 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.