

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

Back-end : Java IntelliJ, Java 8 and 11, JUnit, Mockito, Cucumber, Maven, Spring (environments, tools, frameworks) (Boot, WebFlux, Data JPA), Vert.x, REST, Swagger, SonarLint, Reactor/RxJava

VCS : Git IntelliJ and Visual Studio Code Git integration, GitLab, Git Bash, Bitbucket

Other programming language C, Fortran, Python, C++, Script Shell (Bash, bsh), FLTK

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

General tools L^AT_EX, vi/vim, Microsoft Office, MobaXterm, Mathematica

Front-end : Vue.js Visual Studio Code, Vue.js 2, Jest, Vue Test Utils, HTML5/CSS3, JavaScript, TypeScript, Angular 9 (environment, tools, framework)

Database, deployment jOOQ, MySQL, MariaDB, MongoDB, PostgreSQL, Liquibase, Ansible, Docker

Portuguese bilingual

Spanish intermediate

Professional Experience

03/2021 - Present **Full stack developer, *i-Run***, Toulouse, France.

Maintenance and evolution of the i-Run applications.

- Back-end : Java 8 and 11 - Spring WebFlux - JUnit 4 and 5 - hexagonal architecture
- Front-end : Vue.js 2 - Jest
- Database : jOOQ - MySQL - MariaDB - MongoDB
- GitLab CI
- Legacy code : maintenance - evolution - migration

02/2017 - 02/2021 **Engineer**, *Capgemini DEMS (Sogeti High Tech)*, Toulouse, France.

Java back-end developer and responsible for validation in an Agile team (Scrum) as *Thales Alenia Space* contractor, Toulouse, France.

- Building of a Java application based on microservices architecture:
 - Vert.x, Spring and Java 8 specificities;
 - Interactions with front-end (based on Angular 5) using REST API and Swagger;
 - Introduction to the use of RxJava;
 - 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 or KDiff3, pull-requests and code review with Bitbucket;
- Application deployment under SELinux platform with Ansible;
- Modelization using Papyrus and Capella.
- Business needs analysis, feature test/validation, customer demonstration, support:
 - Needs analysis, refinement and feedback with the Product Owner (PO) or project engineering;
 - Functional tests writing (Cucumber), End-to-End tests writing and manual execution;
 - Feature validation in pre-production, demonstration for the PO;
 - Demonstration of the activities carried out by the team during the sprint, presentation of the sprint review;
 - Non-conformities handling (correction, validation of correction);
 - Product documentation update (technical documentation and user manual with Word, capitalization with RMs);
 - Technical or functional skill transfer for new team members (developers or validators), functional support for team members.

R&D engineer for *Capgemini DEMS (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 internship**, *LAPTh*, France.

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

Supervisor Geneviève BÉLANGER.

05 - 06/2009 **First year Master internship**, *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 Inflation 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.

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.