

Sylvain Arguillère

*Postdoctoral fellow at the CIS,
Jonhs Hopkins University*

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Personal Informations

Nationality French
Born 02/22/1987, at Paris, XVe, France
Marital status Married

Education

- 2011-2014 **PhD in Mathematics under the supervision of Emmanuel Trélat and Alain Trouvé**, *Université Pierre et Marie Curie*.
- 2009-2010 **Agrégation de Mathématiques**.
- 2010-2011 **Master de mathématiques fondamentales**, *Université Pierre et Marie Curie*, Paris VI, (focus on Riemannian geometry).
- 2007-2011 **École Normale Supérieure**, Paris.
- 2005-2007 **Classe préparatoire MPSI-MP***, *Lycée thiers*, Marseille.
- 2005 **Baccalauréat (section scientifique)**, *Lycée Thiers*, Marseille.

Research interest

Riemannian Geometry, *Convex surfaces, closed geodesics, fiber bundles, geodesic equations, infinite dimensional Riemannian geometry and its applications to fluid mechanics.*

Sub-Riemannian geometry and optimal control, *horizontal distributions, Pontryagin maximum principle and constrained maximum principle, infinite dimensional sub-Riemannian geometry and geodesic flows.*

Mathematical shape analysis, *Computational anatomy.*

PHD Thesis

Title *Infinite dimensional sub-Riemannian geometry and applications to shape analysis*
Laboratory Laboratoire Jacques-Louis Lions
Directors Émmanuel Trélat, Alain Trouvé

Teachings

2015-2016 **Postdoctoral fellow**, *Johns Hopkins University*.

- Class "Introduction to Optimal control"
- Class "Non-linear Optimazation"

2014-2015 **Postdoctoral fellow**, *Johns Hopkins University*.

- Class "Introduction to Optimal control"

2013-2014 **Teaching Assistant**, *Université Pierre et Marie Curie*.

- Teaching assistant for 1M001 (mathématiques pour les sciences) (36h).

2012-2013 **Teaching Assistant**, *Université Pierre et Marie Curie*.

- Oral interrogations in LM216 (Calculus in several variables and multiple integral) (10h)
- Teaching assistant for LM256 (Calculus in several variables and multiple integral for engineers) (72h).

2011-2012 **Teaching Assistant**, *Université Pierre et Marie Curie*.

- Teaching assistant for LM121 (Algèbra 101) (72h)
- Teaching assistant for LM216 (Calculus in several variables and multiple integral) (8h)

2010-2011 **Visiting student and instructor**, *Chennai Mathematical institute*, Chennai, India.

- 6-week course of calculus in several variables for undergraduate students.

2009-2010 **Part-time Lecturer**, *Université Pierre et Marie Curie*, Paris, France.

- Teaching assistant for LM270 (Group theory, vector spaces and geometry) (72h)

Talks

October 2015 **The abstract setting for LDDMM and shape analysis**, *GSI 2015*, Paris.

January 2015 **Infinite dimensional sub-Riemannian geometry**, *Infinite-Dimensional Riemannian Geometry with Applications to Image Matching and Shape Analysis*, Vienna.

June 2014 **Infinite dimensional sub-Riemannian geometry and applications to shape analysis**, *PhD thesis defense*, Imperial College, London.

June 2014 **Sub-Riemannian geometry in groups of diffeomorphisms and shape spaces**, *Shape retreat 2014*, Imperial College, London.

May 2013 **Contrôle optimal et analyse de formes**, *Congrès des 30 ans de la SMAI*, France.

May 2013 **Optimal control and shape analysis**, *Shape retreat 2013*, Baltimore, USA.

May 2012 **Optimal control and constrained shape analysis**, *Shape retreat 2012*, ENS Cachan, France.

June 2010 **Intrinsic and extrinsic geometry of surfaces**, *Master 2 thesis defense*, ENS Paris, France.

Research Papers

Preprints

Infinite Dimensional Sub-Riemannian Geometry, *S. Arguillère*, preprint 2016, <http://arxiv.org/abs/1601.00827>.

The General Setting for Shape Analysis, *S. Arguillère*, preprint 2015, <http://arxiv.org/abs/1504.01767>.

LDDMM Surface Registration with Atrophy Constraints, *S. Arguillère, M. Miller, L. Younes*, preprint 2015, <http://arxiv.org/abs/1503.00765>.

Published Papers

Multiple Shape Registration, *S. Arguillère, E. Trélat, A. Trouvé, L. Younés*, preprint, To appear in SIAM J. Imag. Sci. .

Sub-Riemannian Structures on Groups of Diffeomorphisms, *S. Arguillère, E. Trélat*, J. Inst. Math. Jussieu, <http://dx.doi.org/10.1017/S1474748015000249>.

Shape Deformation Analysis From the Optimal Control Viewpoint, *S. Arguillère, E. Trélat, A. Trouvé, L. Younés*, J. Math. Pures Appl. (9) 104 (2015), no. 1, 139–178, <http://dx.doi.org/10.1016/j.matpur.2015.02.004>.

Approximation of Sequences of Symmetric Matrices with the Symmetric Rank-One Algorithm and Applications, *S. Arguillère*, SSIAM. J. Matrix Anal. Appl. 36-1 (2015), pp. 329-347, <http://epubs.siam.org/toc/sjmae1/36/1>.

Proceedings

The Abstract Setting for Shape Analysis, *S. Arguillère*, Second International Conference, GSI 2015, Palaiseau, France, October 28-30, 2015, Proceedings, <http://www.springer.com/us/book/9783319250397>.

Shape Deformation and Optimal Control, *S. Arguillère, E. Trélat, A. Trouvé, L. Younes*, ESAIM : Proceedings and Surveys Vol. 45, Congr'és SMAI 2013, <http://dx.doi.org/10.1051/proc/201445031>.

Languages

French **Native speaker**

English **Fluent**