

# Behrang Noohi

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**Education**      **Massachusetts Institute of Technology**, Cambridge, Massachusetts.  
Ph.D. in Mathematics June, 2000.  
Dissertation: *Fundamental groups of algebraic stacks*, under direction  
of Prof. F. Diamond and Prof. S. Kleiman.

**Sharif University of Technology**, Tehran, Iran.  
B.S. in Mathematics, August, 1994.

**Appointments held**      **Queen Mary, University of London**  
Department of Mathematics. Reader, since 07/2013.

**Queen Mary, University of London**  
Department of Mathematics. Lecturer, 10/2011–6/2013.

**King's College London**  
Department of Mathematics. Lecturer (fixed-term), 09/2008–10/2011.

**Florida State University**  
Department of Mathematics, Assistant Professor (fixed-term), 09/2006–09/2008.

**Max-Planck-Institut Für Mathematik, Bonn**  
Guest researcher, 01/2006–09/2006.

**Institut des Hautes Études Scientifiques**  
Guest researcher, 09/2005–01/2006

**Max-Planck-Institut Für Mathematik, Bonn**  
Guest researcher, 09/2004–09/2005.

**University of Western Ontario**  
Department of Mathematics. Postdoc, 09/2001–09/2004.

**University of British Columbia**  
Department of Mathematics. Postdoc, 09/2000–09/2001.

**Academic visits**      **Newton Institute, Cambridge UK.**  
Semester on Homotopy Theory, Fall 2002.

**M.S.R.I.**  
Semester on Stacks, Spring 2002.

**Research Interests**      Algebraic geometry, Homotopy theory, Higher structures

## Papers

Available at <http://www.maths.qmul.ac.uk/~noohi/research.html>

### Fundamental groups of algebraic stacks

*J. Inst. Math. Jussieu*, **3** (2004), no. 1, 69–103.

### Uniformization of Deligne-Mumford analytic curves

With Kai Behrend. *J. reine angew. Math. (Crelle)*, **599** (2006), 111–153.

### Notes on 2-groupoids, 2-groups, and crossed-modules

*Homotopy, Homology, and Applications*, **9** (2007), no. 1, 75–106.

### String topology for loop stacks

With K. Behrend, G. Ginot and P. Xu. *C. R. Math. Acad. Sci. Paris*, **344** (2007), no. 4, 247–252.

### Lectures on derived and triangulated categories

In *Invitation to Noncommutative Geometry*, M. Khalkhali and M. Marcolli (editors), World Scientific (2007), 383–418.

### Fundamental groups of topological stacks with slice property

*Algebraic and Geometric Topology*, **8** (2008) 1333–1370.

### Explicit HRS-tilting

*Journal of Noncommutative Geometry*, **3** (2009), no. 2, 223–259.

### Butterflies I: morphisms of 2-group stacks

With E. Aldrovandi. *Advances in Mathematics*, **221** (2009), no. 3, 687–773.

### Mapping stacks of topological stacks

*J. reine angew. Math. (Crelle)*, **646** (2010), 117–133.

### Butterflies II: torsors for 2-group stacks

With E. Aldrovandi. *Advances in Mathematics*, **225** (2010), no. 2, 922–976.

### Group cohomology with coefficients in a crossed-module

*J. Inst. Math. Jussieu*, **10** (2011), no. 2, 359–404.

### String topology for stacks

With K. Behrend, G. Ginot and P. Xu. *Astérisque* 343 (2012).

### Homotopy types of topological stacks

*Advances in Mathematics*, **230** (2012), 2014–2047.

### Integrating morphisms of Lie 2-algebras

*Compositio Mathematicae*, **149** (2013), no. 02, 264–294.

### Fibrations of topological stacks

*Advances in Mathematics*, **252** (2014), 612–640.

### Singular chains on topological stacks, I

*Advances in Mathematics*, **303** (2016), 1190–1235.

### Group actions on algebraic stacks via butterflies

*J. Algebra*, **486** (2017), 36–63.

### Moduli of non-commutative polarized schemes

With K. Behrend. Accepted for publication in *Mathematische Annalen*. arXiv:1507.07054v1 [math.AG], 35 pages.

## Preprints / Work in progress

### Group actions on stacks and applications to equivariant string topology for stacks

With G. Ginot. Submitted. arXiv:1206.5603v1 [math.AT], 50 pages.

**Foundations of topological stacks I**

arXiv:math/0503247v1 [math.AG]. Latest version on my webpage, 81 pages.

**Singular chains on topological stacks, II**

With T. Coyne. In preparation.

**Goldman bracket for 2-dimensional orbifolds**

With G. Ginot. In preparation.

**Stokes' theorem and higher classes in group cohomology**

In preparation.

Draft available at <http://www.maths.qmul.ac.uk/~noohi/papers/stokes.pdf>

**Breen-Grothendieck-Schreier theory for crossed modules**

In preparation.

**Selected  
invited talks**

• **London Algebra Colloquium**

February 2017.

• **University of Leeds**

*Algebra Seminar*, November 2016.

• **University of Antwerp**

*Algebra and Geometry Seminar*, May 2016.

• **COW (Cambridge-Warwick-Oxford)**

March 2016.

• **Université de Toulouse**

*Geometry Seminar*, February 2016.

• **Leicester University**

*Transpennine Topology Triangle*, June 2015.

• **Newcastle University**

*Algebra Seminar*, May 2015.

• **Gargnano (Università degli Studi di Milano)**

*Categorical Algebra Workshop*, April 2015.

• **Universität of Zürich**

*Algebraische Geometrie Oberseminar*, April 2014.

• **University of Aberdeen**

*Topology Seminar*, February 2014.

• **University of Padova**

*Higher Structures in Algebraic Analysis*, February 2014.

• **University of Glasgow**

*Geometry and Topology Seminar*, November 2013.

• **University of Leicester**

*Pure Maths Seminar*, October 2013.

• **University of Luxembourg**

*Higher Algebras and Lie-infinity Homotopy Theory*, June 2013.

• **London Algebra Colloquium**

November 2012.

• **University of Copenhagen**

*Topology Seminar*, November 2012.

• **Imperial College London**

*Workshop on Arithmetic Geometry and Homotopy Theory*, May 2012.

• **Banff International Research Station (BIRS)**

*Algebraic Stacks: Progress and Prospects*, Banff, Canada, March 2012.

• **University of Liverpool**

*Pure Maths Colloquium*, Liverpool, February 2012.

• **British Mathematical Colloquium**

*Number Theory and Algebraic Geometry Session*, Leicester, April 2011.

- **University College London**  
*London Number Theory Seminar*, January 2011.
- **University of Sheffield**  
*Pure Maths Colloquium*, Sheffield, November 2010.
- **Kagoshima University**  
*5th Algebra, Analysis and Geometry Conference*, Kagoshima, Japan, February 2010.
- **University of British Columbia**  
*Algebraic Geometry Seminar*. Vancouver, January 2010.
- **Imperial College London**  
*London Number Theory Seminar*, December 2009.
- **Glasgow University**  
*Geometry and Topology Seminar*, November 2009.
- **Instituto Superior Técnico**  
*Algebra Seminar*, July 2009.
- **Université de Nantes**  
*Lecture series on string topology*, June 2009.
- **Leicester University**  
*Transpennine Topology Triangle*, November 2008.
- **Centre de Recerca Matemàtica (CRM)**  
*HOCAT 2008. Homotopy Structures in Geometry and Algebra; Derived Categories, Higher Categories*. Bellaterra, Barcelona, July 2008.
- **Institut de Matemàtica Universitat de Barcelona (IMUB) and (CRM)**  
Plenary speaker at *Workshop on Categorical Groups*. Barcelona, June 2008.
- **University of Padova**  
*Algebraic Analysis and its Environs*. Padova, Italy, June 2008.
- **Centre de Recerca Matemàtica (CRM)**  
*Workshop on Topological and Differentiable Stacks*. Barcelona, April 2008.
- **Columbia University**  
*Algebraic Geometry Seminar*. New York, March 2008.
- **University of Pennsylvania**  
*Special Seminar* organized by Jim Stasheff. Philadelphia, March 2008.
- **Fields Institute**  
*Workshop on Stacks in Geometry and Topology*. Toronto, May 2007.
- **University of Oslo**  
*Topology Seminar*. Oslo, June 2007.
- **University of Bonn**  
*Topology Seminar*. Bonn, Germany, May 2007.
- **University of Barcelona**  
*Algebra Seminar*. Barcelona, May 2007.
- **Institut de Mathématiques de Jussieu (Paris 6,7)**  
*Séminaire d'analyse algébrique*. Paris, February 2007.
- **Pennsylvania State University**  
*Mathematical Physics Seminar*. State College, October 2006.
- **Instituto Superior Técnico**  
*Lecture series*. Lisbon, June 2006.
- **Max Planck Institute**  
*Oberseminar and Topology Seminar*. Bonn, May-June 2006.
- **Institut de Mathématiques de Jussieu (Paris 6,7)**  
*Algèbre et topologie homotopiques*. Paris, May 2006.
- **Université Paris-Nord (Paris 13)**  
*Topology Seminar*. May 2006.
- **Erwin Schrödinger Institute**  
*Workshop on Gerbes, Groupoids, and QFT*. Vienna, Austria, May 2006.

<b>Teacher Training</b>	<p><b>PGCAP</b> Completed Postgraduate Certificate in Academic Practice (PGCAP). Queen Mary, University of London, November 2012.</p> <p><b>Induction Course for New Lecturers</b> Active participation in a two-day teaching workshop at School of Mathematics, University of Birmingham, September 2011.</p>
<b>Lecturing</b>	<p><b>Queen Mary University</b></p> <ul style="list-style-type: none"> <li>• Communicating and Teaching Mathematics (part of UAS Ambassador Scheme)</li> <li>• Cryptography (3rd year)</li> <li>• Topology (4th year)</li> <li>• Geometry of Curves and Surfaces (2nd year)</li> </ul> <p><b>King's College London</b></p> <ul style="list-style-type: none"> <li>• Algebraic Geometry (4th year and MSc)</li> <li>• Geometry of Surfaces (2nd and 3rd year)</li> <li>• Fourier Analysis (3rd and 4th year)</li> <li>• Elementary Number Theory (2nd and 3rd year)</li> </ul> <p><b>F.S.U.</b></p> <ul style="list-style-type: none"> <li>• Calculus I (several sections during four semesters)</li> </ul> <p><b>U.B.C.</b></p> <ul style="list-style-type: none"> <li>• Calculus with Applications to Commerce and Social Sciences;</li> <li>• Finite Mathematics</li> </ul> <p><b>U.W.O.</b></p> <ul style="list-style-type: none"> <li>• Introductory Calculus</li> <li>• Discrete Structures I, II</li> <li>• Topology</li> <li>• Rings and Modules</li> </ul>
<b>Supervision</b>	<p><b>PhD</b> - Thomas Coyne, Queen Mary. Topic: <i>Singular chains on stacks</i>.</p> <p><b>MSc/MSci</b> - Iulian Udrea, Queen Mary. Topic: <i>Cobordism Hypothesis</i>. - Laurent Schadeck, University Paris 11 (jointly with Pierre Schapira and G. Ginot). Topic: <i>Equivariant <math>\mathbb{A}^1</math>-homotopy theory</i>. - Yasha Kamdar, Queen Mary. Topic: <i>Group-based cryptography</i>. - Kang Feng Ng, Queen Mary. Topic: <math>2dTQFT_k = cFA_k</math>.</p> <p><b>RSI</b> <i>Research Science Institute</i>, organized by the Center for Excellence in Education (CEE). Five-week intensive research carried out by selected high school students on the MIT campus, resulting in a research paper.</p>
<b>Professional Activities</b>	<p><b>Refereeing:</b> Advances in Mathematics, Algebraic and Geometric Topology, Journal of Algebra, Journal of Differential Geometry, Journal of Representation Theory, Journal of Homotopy and Related Structures, Mathematische Annalen, Proceedings of LMS, Theory and Applications of Categories</p> <p><b>Reviewer for MathSciNet</b></p>
<b>Conference</b>	Co-organizer of the British Mathematical Colloquium 2014 (Queen Mary).
<b>Grants</b>	<p><b>Royal Society International Exchanges Scheme</b> 12K, 09/2013-09/2015</p> <p><b>LMS Scheme 4 (research in pairs)</b> February 2015</p>

**Miscellaneous Gold and Silver medals in the International Mathematical Olympiad**

Received respectively Gold and silver medals in IMO 1991 (Sweden), and IMO 1990 (China).

**Iranian National Mathematics Contest for High School Students**

Ranked 1st and 2nd nationwide in years 1991, 1990.

**Iranian National Mathematics Contest for College Students**

Ranked 3rd nationwide in years 1992, 1993.

**Iranian Math Olympiad Preparation Camp (1992-1994)**

Member of the National Committee of the Iranian Mathematical Olympiad and mentor of the IMO team of Iran.