

# Alex Atsushi Takeda

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## Employment

- 2020-2022 **Postdoc**, *Institut des Hautes Études Scientifiques*, Bures-sur-Yvette, France
- 2019 **Postdoc**, *Mathematical Sciences Research Institute*, Berkeley, CA. USA

## Education

- 2013-2019 **PhD in Physics**, *University of California, Berkeley*, Berkeley, CA. USA  
under the supervision of Prof. Vivek Shende, UC Berkeley Math Dept, and Prof. Mina Aganagic,  
UC Berkeley Physics Dept.  
Dissertation title: *Developments in the mathematics of the A-model: constructing Calabi-Yau structures  
and stability conditions on target categories*
- 2017 **MA in Physics**, *University of California, Berkeley*, Berkeley, CA. USA
- 2009-2013 **BSc in Physics** *California Institute of Technology*, Pasadena, CA. USA

## Research

**Pre-Calabi Yau algebras and topological quantum field theories**, with Maxim Kontsevich and  
Yiannis Vlassopoulos, available at [arXiv:2112.14667](https://arxiv.org/abs/2112.14667).

**Relative stability conditions on Fukaya categories of surfaces**, to appear in *Mathematische  
Zeitschrift*. Available at [arXiv:1811.10592](https://arxiv.org/abs/1811.10592)

**Introduction to differential graded categories**, contribution to *Superschool on Derived Categories  
and D-branes*, Edmonton, Canada, July 2016, **Volume 240** of Springer proceedings in Mathematics  
& Statistics

**Calabi-Yau structures on topological Fukaya categories**, with Vivek Shende, submitted. Avail-  
able at [arXiv:1605.02721](https://arxiv.org/abs/1605.02721)

**Validation of procedures used by CMS in the characterization of Higgs candidate events**,  
with Maria Spiropulu, Si Xie and Emanuele di Marco, available at [https://authors.library.  
caltech.edu/37003/](https://authors.library.caltech.edu/37003/)

## Some talks and presentations

- 2022 **Pre-CY algebra and TQFT operations on Hochschild complexes**, *Séminaire Équations Différen-  
tielles*, IHES, Bures-sur-Yvette, France.

- 2021      **The ribbon quiver complex and operations on Hochschild invariants**, *EPFL algebraic geomtry seminar*, Lausanne, Switzerland.
- 2020      **Pre-Calabi-Yau categories and dualizability in 2d**, *Caltech geometry and topology seminar*, Caltech, Pasadena, CA.
- 2020      **Pre-Calabi Yau structures**, *Knots, Strings, Symplectic Geometry and Dualities*, Mittag-Leffler Institute, Stockholm, Sweden.
- 2020      **Gluing stability conditions**, *Leicester Algebra and Geometry Seminar*, available at <https://sites.google.com/view/lagoonleicester/home>
- 2020      **Integrating non-commutative Calabi-Yau structures**, *Paris algebra seminar*. Paris, France.
- 2019      **Relative stability conditions**, *Holomorphic differentials in Mathematics and Physics*, MSRI, Berkeley CA, USA.
- 2018      **Stability conditions on Fukaya categories of surfaces: Some new techniques and results**, *Higher Algebra and Mathematical Physics*, Perimeter Institute, Waterloo, ON, Canada.
- 2018      **Using sheaf techniques to construct structures on categories**, IPMU, Kashiwa, Japan.
- 2017      **Using sheaves and cosheaves of categories to construct Calabi-Yau structures** *Berkeley-Tokyo Summer School on Geometry, Representation Theory and Mathematical Physics seminar*, UC Berkeley.
- 2017      **Calabi-Yau categories and 2d TCFTs**, *Geometry, Representations and some Physics*, UC Berkeley.

## Teaching experience

- 2013-2017    **Graduate Student Instructor** for several Physics courses at UC Berkeley.
- 2012        **Deans' tutor** at Caltech in mathematics and physics.

## Other work

- 2022        Co-organized the [Workshop on Quantum Geometry](#) at IHES.
- 2021        Co-organized the postdoc seminar on Resurgence and Morse-Novikov theory at IHES.
- 2020        Invited participant in the research program “Knots, Strings, Symplectic Geometry and Dualities” at the [Mittag-Leffler Institute](#)
- 2017        Co-organized the Geometry, Representations and some Physics seminar at UC Berkeley.
- 2016        Organized a reading seminar on Resurgence in QFT.

## Awards

- 2016-2018   **Graduate Division Summer Grant** at UC Berkeley
- 2015        **Thelma E. Buchanan Scholarship Fund** at UC Berkeley

2012 Musk Foundation Undergraduate Summer Research Fellow at CMS/CERN  
2012 Named Richter Memorial Fund Scholarship, for research at CERN

## **Language skills**

Fluent in English, French and Portuguese (first language)  
Advanced proficiency in Japanese

## **Citizenship**

Brazilian