# Arjun Paul

*Curriculum Vitae*

*Department of Mathematics*
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## Personal Details

First Name: **Arjun**
Surname: **Paul**
Gender: **Male**
Date of Birth: **January 29, 1990**
Nationality: **Indian**
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## Languages

Bengali Fluent
English Fluent
Hindi Fluent

## Positions held

- **Post-doctoral Fellow** in the Department of Mathematics at IIT Bombay, Mumbai, India, from February 22, 2019 to present.
- **Post-doctoral Fellow** in the Department of Mathematics at IMSc, Chennai, India, from August 06, 2018 to February 21, 2019.
- **Short-term Visiting Fellow** in the School of Mathematics at TIFR, Mumbai, India, from April 12, 2018 to July 31, 2018.

## Education

2013–2018 **Ph.D. in Mathematics**, *Tata Institute of Fundamental Research*, Mumbai, India.
Ph.D. Thesis Title: *On equivariant bundles, logarithmic connections and moduli of principal bundles*.
Thesis advisor: Professor Indranil Biswas.
Thesis submitted on April 11, 2018, and defended on July 30, 2018.

2010–2012 **M.Sc. in Mathematics**, *Jadavpur University*, Kolkata, West Bengal, India.

2007–2010 **B.Sc. (Honours) in Mathematics**, *Jadavpur University*, Kolkata, West Bengal, India.

## Research Interests

Algebraic geometry and differential geometry. More precisely, vector bundles and principal bundles, logarithmic connections on bundles, equivariant bundles, Higgs bundles, system of Hodge bundles, opers, moduli spaces and stacks of bundles, fundamental group schemes, derived category, Bridgeland stability etc.

## Publications and preprints

10. Fundamental Group Schemes of n-fold Symmetric Product of a Smooth Projective Curve, (with Ronnie Sebastian), arXiv:1907.09388 (*preprint*).

9. Fundamental group of moduli of principal bundles on curves, (with Indranil Biswas and Swarnava Mukhopadhyay); arXiv:1609.06436 (*preprint*).

8. Fundamental Group Schemes of Hilbert Scheme of n Points on a Smooth Projective Surface, (with Ronnie Sebastian), *Bull. Sci. Math.* **164**, November 2020, 102898 (25 pp.) (doi:10.1016/j.bulsci.2020.102898); arXiv:1907.04290.

7. Criterion for existence of a logarithmic connection on a principal bundle over a smooth complex projective variety, (with Sudarshan Gurjar), *Ann. Global Anal. Geom.* **58** (2020), no. 3, 241–251. (doi:10.1007/s10455-020-09723-8); arXiv:1912.00598v2.

6. Corrigendum to "System of Hodge bundles and generalized opers on smooth projective varieties", (with Suratno Basu and Arideep Saha), *J. Geom. Phys.* **150** (2020), 103614, 3 pp. (doi: 10.1016/j.geomphys.2020.103614).

5. System of Hodge Bundles and Generalized Opers on Smooth Projective Varieties, (with Suratno Basu and Arideep Saha); *J. Geom. Phys.* **145** (2019), 103484, 10 pp. (doi: 10.1016/j.geomphys.2019.103484); arXiv:1903.11347.

4. Logarithmic connections on principal bundles over a Riemann surface, (with Indranil Biswas, Ananyo Dan and Arideep Saha), *Internat. J. Math.* Vol. **28** (2017), No. 12, 1750088, 18 pp, (doi:10.1142/S0129167X17500884); arXiv:1705.00852.

3. Equivariant bundles and adapted connections, (with Indranil Biswas and Arideep Saha), *New York J. Math.* **23** (2017), 859–872; arXiv:1707.05467.

2. Criterion for logarithmic connections with prescribed residues, (with Indranil Biswas and Ananyo Dan), *Manuscr. Math.* **155** (2018), 77–88; (doi: 10.1007/s00229-017-0935-6); arXiv:1703.09864.

1. Equivariant bundles and connections, (with Indranil Biswas), *Ann. Global Anal. Geom.* **51** (2017), 347–358; MR3648994; (doi: 10.1007/s10455-016-9538-9); arXiv:1611.08854.

## Teaching

3. Teaching Assistant in MA 414 (Algebra 1/Galois Theory), Spring 2020, IIT Bombay. Course instructor: Prof. Ronnie Sebastian.

2. Teaching Assistant in MA 207 (Differential Equations II), Autumn 2019, IIT Bombay. Course instructor: Prof. Swapneel A. Mahajan.

1. Teaching Assistant in MA 205 (Complex Analysis), Autumn 2019, IIT Bombay. Course instructor: Prof. U.K. Anandavardhanan.

## Academic Visits

2. Department of Mathematics and Statistics in the Indian Institute of Science Education and Research Kolkata, April 2019.

1. Department of Mathematics at the Indian Institute of Science Education and Research Bhopal, 16th to 23th September, 2018.

## Talks given

13. *Fundamental group schemes of Hilbert scheme of $n$ points on a surface*, at ICTS Seminar (online), September 29, 2020.

12. *Mehta-Ramanathan's restriction theorems and their applications*, at the *Algebraic Geometry Seminar* in the Department of Mathematics, Indian Institute of Technology Bombay, Mumbai; March 06 & 13, 2020.

11. *Fundamental group schemes of Hilbert scheme of n points on irreducible smooth projective varieties of dimension 1 and 2*, at the *Geometry and Topology seminar* in the Department of Mathematics, Indian Institute of Technology Bombay, Mumbai; February 26, 2020.

10. *Equivariant principal bundle on a complex manifold*, at a Seminar in the Department of Mathematics and Statistics, IISER Kolkata; April 10, 2019.

9. *Fundamental group of moduli of principal bundles over a curve*, in the Department of Mathematics, IISER Bhopal; September 2018.

8. *Fundamental group of moduli of principal bundles on curves*, at a Seminar in the Department of Mathematics, IIT Bombay; July 27, 2018.

7. *Fundamental group of moduli of principal bundles on curves*, at Workshop on Geometric Invariant Theory 2018, Kerala School of Mathematics; May 2018.

6. *Equivariant bundles*, at Mathematics Students' Seminar in the School of Mathematics, Tata Institute of Fundamental Research, Mumbai; April 17, 2018.

5. *Moduli of Semistable vector bundles on curves*, at Geometry Seminar in the School of Mathematics, Tata Institute of Fundamental Research, Mumbai; February 09, 2018.

4. *Semistable vector bundles and Higgs bundles*, at Mathematics Students' Seminar in the School of Mathematics, Tata Institute of Fundamental Research, Mumbai; November 21, 2017.

3. *Connection on vector bundles*, at Mathematics Students' Seminar in the School of Mathematics, Tata Institute of Fundamental Research, Mumbai; February 07, 2017.

2. *Vector bundles and moduli spaces of sheaves*, an informal lecture series in the School of Mathematics, Tata Institute of Fundamental Research, Mumbai; November 2015 to May 2016.

1. *Kobayashi-Hitchin correspondence*, at Mathematics Students' Seminar in the School of Mathematics, Tata Institute of Fundamental Research, Mumbai; February 17, 2015.

## Workshops/Schools/Conferences

2020 **Moduli of bundles and related structures**, *February 10–14, 2020*, Ramanujan Lecture Hall, ICTS, Bangalore, India.

2018 **Conference on Algebraic Geometry and related areas**, *July 10–12, 2018*, IMSc, Chennai, India.

2018 **Workshop on Geometric Invariant Theory**, *May 14–19, 2018*, Kerala School of Mathematic, Kozhikode, India.

2018 **Analytic Geometry**, *March 26–30, 2018*, tifr, Mumbai, India.

2018 **Analytic and Algebraic Geometry**, *March 19–24, 2018*, Madhava Lecture Hall, ICTS, Bangalore, India.

2017 **Algebraic Geometry and Number Theory conference**, *December 14–20, 2017*, Indian Statistical Institute, Bangalore Center, India.

2017 **Moduli Spaces**, *September 11–16, 2017*, Ventotene (LT), Italy.

2017 **Annual Discussion Meeting on Complex Analytic Geometry**, *March 27–31, 2017*, tifr, Mumbai.

2017 **Complex Geometry**, *March 20–25, 2017*, Ramanujan Lecture Hall, ICTS, Bengaluru, India.

2016 **Higgs Bundles**, *March 21–April 01, 2016*, Madhava Lecture Hall, ICTS, Bangalore, India.

2015 **Algebraic Geometry conference**, *December 10–16, 2015*, Indian Statistical Institute, Bangalore Center, India.

2015 **School on Algebraic Surfaces**, *July 20–August 01, 2015*, Advanced Training in Mathematics Schools, Manipal University, India.

## Other professional activities

- AMS MathSciNet reviewer.

## Awards/Fellowships

CSIR-UGC Junior Research Fellowship (June 2012).

## Other Interests

- Computer programming,
- Photography and painting.

## References


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