

# Ved V. Datar

## Curriculum Vitae

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### CONTACT AND PERSONAL INFORMATION

- **Address.** Dept. Of Math., Indian Institute of Science (IISc), Bangalore, KA - 560012, India
- **Email Address.** vvdatar@iisc.ac.in
- **Webpage.** [www.math.iisc.ac.in/~vvdatar](http://www.math.iisc.ac.in/~vvdatar)

### RESEARCH INTERESTS

- Geometric Analysis
- Complex differential geometry

### EMPLOYE-MENT

- *Assistant Professor* September 2018 - Present  
Indian Institute of Science (IISc), Bangalore, India
- *Summer Lecturer* June 2018 - August 2018  
UC Berkeley, Berkeley, USA
- *RTG postdoc* July 2015 - June 2018  
UC Berkeley, Berkeley, USA
- *Visiting Instructor* August 2014 - May 2015  
University of Notre Dame, Notre Dame, USA
- *Teaching Assistant and Graduate student* Fall 2008-July 2014  
Rutgers, The State University of New Jersey, New Brunswick, USA

### EDUCATION

- *Ph.D.*, Mathematics, May 2014  
Rutgers, The State University of New Jersey, New Brunswick, NJ  
**Advisor.** Jian Song  
**Thesis title.** *Canonical Kähler metrics with cone singularities*  
<https://rucore.libraries.rutgers.edu/rutgers-lib/44071/>.
- *Bachelor of Science (Honors)*, Mathematics and Computer Science, August 2008  
Chennai Mathematical Institute, India.

### PUBLICATIONS AND PREPRINTS (in the order they appeared on arXiv)

12. *Diameter rigidity for Kahler manifolds with positive bisectional curvature* (with Harish Seshadri), arXiv:2108.06143.
11. *Kähler-Einstein metric near an isolated log canonical singularity* (with Xin Fu and Jian Song), arXiv:2106.05486.
10. *Metric rigidity of Kahler manifolds with lower Ricci bounds and almost maximal volume* (with Harish Seshadri and Jian Song), PROC. OF THE AMS, **149** (2021), no. 8, 3569–3574.
9. *A numerical criterion for generalised Monge-Ampere equations on projective manifolds* (with Vamsi Pingali), to appear in GEOM. FUNC. ANAL. (GAFA), arXiv:2006.01530.
8. *On coupled constant scalar curvature Kähler metrics* (with Vamsi Pingali), J. SYMPLECTIC GEOM, **18** (2020), no. 4, 961–994.
7. *Adiabatic limits of anti-self-dual connections on collapsed K3 surfaces* (with Adam Jacob and Yuguang Zhang), J. DIFFERENTIAL GEOM. **118** (2021) 223-296.
6. *Hermitian-Yang-Mills connections on collapsing elliptically fibered K3 surfaces* (with Adam Jacob), to appear in J. GEOM. ANAL., preprint, arXiv:1710.03898.

5. *Expansions of solutions to extremal metric type equations on blow-ups of cscK surfaces*, ANN. GLOBAL ANAL. GEOM. **55** (2019), no. 2, 215–241.
4. *Kähler-Einstein metrics along the smooth continuity method* (with Gábor Székelyhidi), GEOM. FUNCT. ANAL. (GAFA) **26** (2016), no. 4, 975–1010.
3. *On convexity of the regular set of conical Kähler-Einstein metrics*, MATH. RES. LETT. **23** (2016), no. 1, 105–126.
2. *A remark on Kähler metrics with conical singularities along a simple normal crossing divisor* (with Jian Song), BULL. LOND. MATH. SOC. **47** (2015), no. 6, 1010–1013.
1. *Connecting toric manifolds by conical Kähler-Einstein metrics* (with Bin Guo, Jian Song and Xiaowei Wang), ADV. MATH. **323** (2018), 38–83.

## AWARDS

- Infosys Young Investigator Award August 2019–July 2021
- AMS travel award for attending Joint Mathematics Meetings November 2013
- SAS Excellence Fellowship for dissertation work in Mathematics Fall 2013  
School of Arts and Sciences (SAS), Rutgers University
- TA Teaching Excellence Award, Spring 2012  
Department of Mathematics, Rutgers University
- Fellowship from National Board for Higher Mathematics, India, 2005–2008  
Awarded based on performance in the Indian National Mathematics Olympiad

## SERVICE

- Referee for Annales de l’Institut Fourier, American journal of mathematics, Journal of geometric analysis, Mathematical Research Letters, Journal of Differential Geometry and Proceedings of the Indian academy of Sciences.
- Organiser for the IISc Geometry and Topology seminar, and co-organiser of the IISc informal geometric analysis seminar.
- Organised the UC Berkeley Differential geometry seminar in Fall 2016 and Spring 2018.
- Co-organized (with Richard Bamler) the student differential geometry seminar at Berkeley in Spring 2017

## TEACHING & MENTORING

- PhD Students - Ramesh Mete (ongoing), Sivaram P (ongoing), Bappa Ghosh (pre comprehensive).
- UG/MSc Students - Saurav Ghosh (CMI, MSc Project, August 2019), Vasanth P (MSc Project, 2020–21), Adithya Upadhyay (UG Project, Jan 2021).
- Summer projects - Gobinda Debnath (NIT Agartala, 2019).
- ATM schools - AIS in *Riemannian Geometry* (July 2019) and Geometric Analysis (Dec, 2019), ATM-IST in *Geometry of Complex functions* (July 2021).

## CONFERENCE TALKS

- *Moment maps and canonical metrics in complex geometry*, July, 2020  
Virtual Math Fest.
- *Adiabatic limits of ASD connections on collapsed K3 surfaces*, March, 2019  
International conference on Algebraic and Analytic Geometry, Kerala School of Mathematics (KSOM).
- *Constant scalar curvature metrics on blow-ups of Kähler surfaces*, Nov. 2017  
AMS Special session on Geometric Analysis, Fall Western sectional meeting, UC Riverside.

- *Extremal metrics on blow-ups*, Jul. 2017  
Trends In Modern Geometry 2017, Tokyo, Japan.
- *Kähler-Einstein metrics along the smooth continuity method*, Jun. 2016  
Recent advances in complex differential geometry, Toulouse, France.
- *Kähler-Einstein metrics along the smooth continuity method*, Jun. 2015  
Jagiellonian University, Krakow, Poland.
- *Conical soliton metrics on Kähler manifolds*, Mar. 2014  
Special Session on Interaction between Complex and Geometric Analysis,  
Spring Eastern Sectional Meeting of the AMS, Maryland.
- *Conical soliton metrics on Kähler manifolds*, Jan. 2014  
Special Session on Recent Progress in Geometric and Complex Analysis,  
Joint Mathematics Meetings of AMS, Maryland.
- *Connectedness of the space of singular KE metrics on toric varieties*, Apr. 2013  
Graduate Student Topology and Geometry Conference, Notre Dame.

## OTHER TALKS

- *Nakai type criteria for solving certain general inverse Hessian type equations on projective manifolds*, Oct, 2020  
Differential Geometry Seminar, UC Berkeley (online)
- *(Inverse)-Hessian type equations and positivity in complex algebraic geometry*, June, 2020  
CMI Online Seminar Series.
- *Hermitian-Yang-Mills connections on collapsing K3 surfaces*, May 2018  
Southern California Differential Geometry Seminar,  
UC Riverside.
- *Constant scalar curvature metrics on blow-ups of Kähler surfaces*, Oct. 2017  
Geometry/Topology Seminar, UC Davis
- *Constant scalar curvature metrics on blow-ups of Kähler surfaces*, Sept. 2017  
Differential geometry seminar, UC Berkeley
- *Kähler-Einstein metrics on Fano manifolds*, January 2016  
Geometry/Topology Seminar, UC Davis
- *Kähler-Einstein metrics along the smooth continuity method*, Dec. 2015  
Bay Area Differential Geometry Seminar, MSRI, Berkeley
- *Kähler-Einstein metrics along the smooth continuity method.*, Nov. 2015  
Geometry and Analysis seminar, UC Santa Cruz
- *Kähler-Einstein metrics along the smooth continuity method.*, Sept. 2015  
Differential geometry seminar, UC Berkeley
- *Kähler-einstein metrics along the smooth continuity method*, Jul. 2015  
Chennai Mathematical Institute, Chennai, India
- *Connecting toric manifolds by conical KE metrics*, Apr. 2015  
JHU-UMD Complex geometry seminar, Johns Hopkins
- *Convexity of regular set of singular KE metrics*, Nov. 2014  
Analysis Seminar, Northwestern University
- *Conical soliton metrics on Kähler manifolds*, Sept. 2013  
Complex Analysis and Geometry Seminar, Rutgers University

**COURSES  
TAUGHT**

**Indian Institute of Science.**

- *Riemannian Geometry* Aug 2019  
Aug 2021
- *Complex Analysis* Jan 2020
- *Topics in Riemannian Geometry: Cheeger-Colding-Naber theory* Aug 2020
- *Calculus on manifolds* Jan 2021

**UC Berkeley.**

- *Honors single variable calculus 1B* Fall 2015
- *Honors Multivariable Calculus* Fall 2015  
Spring 2018
- *Real Analysis* Spring 2017  
Fall 2017  
Summer 2018
- *Complex Analysis* Fall 2016

**University of Notre Dame.**

- *Calculus-2 and Linear algebra and differential equations* Spring 2015
- *Calculus-1 and Calculus-3* Fall 2014

**Rutgers University as Instructor.**

- *Advanced Calculus for Engineering* Summer 2014
- *Mathematical Theory of Probability* Summer 2011

**Rutgers University as TA.**

- *Differential Equations for Engineering and Physics* Fall 2011 - Spring 2014
- *Calculus-2 for the Mathematical and Physical Sciences* Spring 2010  
Fall 2009
- *Calculus-1 for the Mathematical and Physical Sciences* Fall 2010