

# Viji Z. Thomas

Assistant Professor,  
Indian Institute of Science Education and Research Thiruvananthapuram  
(IISER TVM)

## Personal Data

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CITIZENSHIP:	Republic of India	E-MAIL:	<a href="mailto:vthomas@iisertvm.ac.in">vthomas@iisertvm.ac.in</a>
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VISA:	Permanent Resident (Green Card).		

## Education

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JULY 2010 Ph.D. in MATHEMATICS, **Binghamton University**, State University of New York  
Advisors: Luise-Charlotte Kappe and Fernando Guzman  
Title: *On the nonabelian tensor product and some generalizations.*

MAY 2005 M.S. in MATHEMATICS, **Wichita State University**, Wichita, Kansas.

MAY 2000 B.E. in ELECTRICAL ENGINEERING, **Maharaja Sayajirao University**, Vadodara, India.

## Positions

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JAN 2020 – PRESENT *Associate Professor*, School of Mathematics, IISER TVM.

AUG 2018 – MAY 2019 *Visiting Assistant Professor*, CLEVELAND STATE UNIVERSITY, USA.

JUL 2013 – DEC 2019 *Assistant Professor*, School of Mathematics, IISER TVM.

OCT 2012 – JUL 2013 *Visiting Scientist*, Kerala School of Mathematics, Kozhikode.

SEP 2010 – SEP 2012 *Postdoctoral Fellow*, Tata Institute of Fundamental Research, Mumbai.

## Research Interests

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- Group Theory, Homological and Commutative Algebra

## Teaching Experience

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2018 – 2019 *Visiting Assistant Professor*, Department of Mathematics, CLEVELAND STATE UNIVERSITY  
**Courses:** Course for Elementary School Teachers I and II, Number Theory, Honors Calculus, Multivariable Calculus.

JUL 2013 - PRESENT *Asst/Assoc. Professor*, School of Mathematics, IISER TVM  
**Graduate Courses:** Algebra 1, Galois theory, Complex Analysis, Representation theory of finite groups, Algebraic Number theory, Commutative Algebra, Linear Algebra, Topics in Number Theory, General Topology.  
**Undergraduate Courses:** Number Theory and Cryptography, Multivariable Calculus.

2005 – 2009 *Teaching Assistant*, Binghamton University, SUNY  
**Courses taught as the instructor of record:** Calculus I, Calculus II, Calculus III, Linear Algebra, Complex Analysis.  
**Courses taught as a teaching assistant:** Calculus I, Mathematics in Action (General Education course)

2003 – 2005 *Teaching Assistant*, Wichita State University  
Courses taught as the instructor of record: College Algebra, Intermediate Algebra.

## Publications

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7. *A property of  $p$ -groups of nilpotency class  $p+1$  related to a theorem of Schur.*, with A. Antony and K. Patali, *Isr. J. Math.* **247**, 251-267 (2022)

6. *On Schurs exponent property and its relation to Noether's Rationality problem.*, [Indian J. Pure Appl. Math.](#) **52**, 729-734 (2021).
5. *The second stable homotopy group of the Eilenberg-MacLane space.*, with A. Antony, G. Donadze and Vishnu Prasad, [Math. Z.](#) **287** (2017), 1327-1342.
4. *On some closure properties of the nonabelian tensor product.*, with G. Donadze and M. Ladra, [J. Algebra](#), **472** (2017), 399-413.
3. *Bazzoni-Glaz Conjecture*, with G. Donadze, [J. Algebra](#), **420** (2014), 141-160.
2. *Two generalizations of the nonabelian tensor product*, with M. Ladra, [J. Algebra](#), **369** (2012), 96-113.
1. *The nonabelian tensor product of finite groups is finite: A homology free proof*, in [Glasgow Math. J.](#), **52** (2010), 473-477.

## Preprint

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2. *Bounding the exponent of a finite group by the exponent of the automorphism group and a theorem of Schur.*, P. Komma and V. Z. Thomas, arXiv:2112.01024v1.
1. *The maximum number of triangles in a graph and its applications to special  $p$ -groups*, T. Mavely and V. Z. Thomas, arXiv:2205.05899v1.

## Awards / Grants

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2017 – 2020	Member of the Indian Team for the DST-RFBR Indo-Russian Project INT/RUS/RSF/P-2	3900000 INR (\$ 58353)
2016 Dec 13 – Dec 23	<i>GIAN</i> (Global Initiative of Academic Networks) workshop on Class Field Theory <b>International Expert: Prof. Adrian Vasiu</b> <a href="http://www.gian.iitkgp.ac.in/">http://www.gian.iitkgp.ac.in/</a> Government of India approved the GIAN Program aimed at the global pool of scientists and entrepreneurs to encourage their engagement with institutes of Higher Education in India so as to augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence.	800000 INR (\$ 12000)
2016 Dec 05 – Dec 31	1-Month <i>AFS</i> (Annual Foundation Schools) by the <a href="#">National Centre for Mathematics</a> The Annual Foundation Schools are aimed at first and second year Ph.D. students. The basic subjects of Algebra, Analysis, and Topology are spread over AFS-I, II and III. A total of 9 subjects are covered.	1131850 INR (\$ 16932)
Jun 20 – Jul 16	AFS-III ( <a href="https://www.atmschools.org/2016/afs/afsiiii/tvm/speakers-and-syllabus">https://www.atmschools.org/2016/afs/afsiiii/tvm/speakers-and-syllabus</a> )	1126450 INR (\$ 16851)
2015 May 10 – Jun 06	AFS-II ( <a href="https://www.atmschools.org/2015/afs/afsi-iiser/speakers-and-syllabus">https://www.atmschools.org/2015/afs/afsi-iiser/speakers-and-syllabus</a> )	1031100 INR (\$ 15425)
2018 April 02– April 07	Teachers Enrichment Workshop ( <a href="https://www.atmschools.org/2018/tew/alamc">https://www.atmschools.org/2018/tew/alamc</a> )	209700 INR (\$ 3273)
April 30– May 05	Teachers Enrichment Workshop ( <a href="https://www.atmschools.org/2018/tew/gtca">https://www.atmschools.org/2018/tew/gtca</a> )	215700 INR (\$ 3350)
2019 June 3–June 15	Instructional School for Teachers ( <a href="https://www.atmschools.org/school/2019/IST/rt">https://www.atmschools.org/school/2019/IST/rt</a> )	471500 INR (\$ 6600)
2015 May 22 – May 24	SERB Travel Grant ITS/0628/2015-16	130000 INR (\$ 1945)

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## Advising

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### Ph.D. Students

2015 – PRESENT	Ammu Elizabeth Antony	<i>Schurs exponent Conjecture</i>
2018 – PRESENT	Komma Patali	<i>Gaschütz Conjecture</i>
2019 – PRESENT	Tony Mavely	<i>Not Decided yet</i>

## Master Thesis

2019 – 2020	Mithun P. V	<i>Class Field Theory</i>
2018 – 2019	Hari Asokan	<i>Fourier Analysis on Finite Abelian Groups and Profinite Groups</i>
2017 – 2018	Ajsal Shereef	<i>AKS Primality Testing and Elliptic Curve Cryptography</i>
2016 – 2017	Muhammad Rashad E. K.	<i>Nagata Idealization and Prime Ideal Principle.</i>
2015 – 2016	D. Arun Chaithanya	<i>Dirichlet's Theorem on Infinitely Many Primes in Arithmetic Progression.</i>
	Meenakshy Jyothis	<i>Multilinear Algebra and its Applications.</i>
	Sreejith M. M.	<i>The Prime Number Theorem.</i>
	Vishnu Prasad	<i>On <math>p</math>-groups with emphasis on Special and Extra-special <math>p</math>-groups.</i>
2014 – 2015	Sandeep E. M.	<i>Non-abelian tensor product and Schur multiplier.</i>

## Visiting Positions

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- Visiting Assistant Professor at Cleveland State University for the year 2018-2019.
- Was offered a Visiting Assistant Professor position at Pennsylvania State University, Altoona Campus, USA for the year 2017-2018.
- Was offered a Visiting Assistant Professor position at Adelphi University, New York to take lead for their new International program for the year 2017-2018.
- Awarded the *PEIN* Grant, Government of Spain to carry out research at University of Santiago de Compostela.

## Service/Membership

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- Member of the National Center for Mathematics(NCM) Programme Committee for AFS.
- Member of the Board of Studies for Mar Ivanios College, Thiruvananthapuram.
- Member of the Board of Studies for SB College, Changanacherry.
- Reviewer for Mathematical Reviews, MathSciNet Reviewer Number: 129456
- Senate Member of IISER TVM.
- Serving as Chief Hostel Warden since Oct 7, 2015.
- Served as Institute Outreach Coordinator for 1 and half years.
- Served in all Phd and IPhD exam and interview committees.

## Presentations and Seminars

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### Chaired Sessions

2. The **Zassenhaus Conference**, Binghamton University, USA, May 22–24, 2015.
1. *Group Theory II* Session, The **116<sup>th</sup> Annual AMS / MAA Meeting**, San Francisco, CA, January 13–16, 2010.

### Invited Conference Presentations

14. *Schurs Conjecture*, Group Algebras, Representations and Computation, ICTS Bangalore, India, Oct 14-23, 2019.
13. *The Bazzoni-Glaz Conjecture*, CAAG, IISER Pune, India, Dec 5-8, 2017.
12. *The second stable homotopy group of the Eilenberg-MacLane Space and Schur Multiplier*, Zassenhaus Conference, Binghamton University, USA, May 26-28, 2017.
11. *Closure Properties of the Nonabelian tensor Product of Groups*, The Zassenhaus Conference, Adelphi University, USA, June 10–12, 2016.
10. *The second stable homotopy group of the Eilenberg-MacLane space*, International Conference on Topology and Groups, Goa University, October 16–21, 2015.

9. *The second stable homotopy group of the Eilenberg-MacLane space*, The Zassenhaus Conference, Binghamton University, USA, May 22–24, 2015.
8. *The Workshop on Schur Multipliers and related topics*, HRI, Allahabad, India, March 1–8, 2014. (Set of 4 Lectures)
7. *The Nonabelian Tensor Product and the Box-Tensor Product of Groups*, Groups, Actions and Computation Workshop cum Conference, HRI, Allahabad, India, September 1–12, 2010.
6. *A General Construction for the box-tensor product*, The 30<sup>th</sup> Ohio State University Mathematics Conference, Columbus, Ohio, May 21–23, 2010
5. The 116<sup>th</sup> Annual AMS / MAA meeting, San Francisco, CA, January 13–16, 2010.
4. *Free Products and the Box-Tensor Product of Groups: a Commutator Connection*, Second Annual Graduate Conference in Algebra and Topology, Binghamton University, Binghamton, NY, November 14–15, 2009.
3. *Cantor's Diagonalization Revisited: Constructing Transcendental Numbers*, Fall meeting, MAA Seaway Section, Fredonia, NY, October 23–24, 2009.
2. *The Box-Tensor Product, a Generalization of the Nonabelian Tensor Product of Groups*.
  - Groups St. Andrews Conference, University of Bath, Bath, England, August 2009.
  - Zassenhaus Group Theory Conference, Franklin and Marshall College, Lancaster, Pennsylvania, May 2009.
1. *The nonabelian tensor product of finite groups is finite: A homology free proof*.
  - Graduate Research Conference in Algebra and Representation Theory, Kansas State University, Manhattan, Kansas, May 2009.
  - 34<sup>th</sup> Annual New York State Regional Mathematics Conference, Syracuse University, Syracuse, New York, March 2008.
  - Zassenhaus Group Theory Conference, Ohio State University, Columbus, Ohio, May 2008.

## Seminar Presentations

18. Colloquium at Kent State University, OH, USA, March 19, 2019.
17. Department Seminar at University of South Florida, Florida, USA, Jan 23 2019.
16. Department Seminar at Binghamton University, Binghamton, NY, USA Oct 15, 2018.
15. Department Seminar at Lafayette College, Easton, PA, May 24, 2017.
14. Department Seminar at Penn State Altoona, April 28, 2017.
13. Colloquium talk at Indian Institute of Technology(IIT), Bombay, October 26, 2016.
12. *Bazzoni-Glaz Conjecture*.
  - Seminar at ISI Kolkata, September 12, 2013.
  - Algebra Seminar at SUNY-Binghamton, Binghamton, April 17, 2012.
11. A set of two lectures on *Gaussian rings and Prüfer domains*, Seminar at Indian Institute of Technology, Bombay, September 29 – October 3, 2011.
10. *A journey from Gauss's lemma to Prüfer domains to Gaussian rings*, Colloquium at Indian Statistical Institute, Bangalore, August 18, 2011.
9. *The nonabelian tensor product and the box-tensor product of groups*, Colloquium at TIFR, Mumbai, October 14, 2010.
8. *The Weak Dimensions of Gaussian Rings*, Algebra and Number Theory Seminar, Binghamton University, February 2010.
7. *Cantor's Diagonalization Revisited: Constructing Transcendental Numbers*, Undergraduate Seminar, Binghamton University, November 2009.
6. *Automorphisms of direct products of finite groups*, Algebra Seminar, Binghamton University, September 2009.

5. *Lecture Series in the Mathematical Sciences*, Wichita State University, Wichita, Kansas, May 2009.
4. *A universal construction for the nonabelian tensor product and some applications*, Algebra Seminar, Binghamton University, September 2008.
3. *Computing nonabelian tensor squares of polycyclic groups*, Algebra Seminar, Binghamton University, September 2008.
2. *The nonabelian tensor product of finite groups is finite: A homology free proof*, Algebra Seminar, Binghamton University, February 2008.
1. *An introduction to nonabelian tensor products*, Algebra Seminar, Binghamton University, October 2007.

## Research Visits

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4. University of Santiago de Compostela, Spain, November 25 – Dec 25, 2015.
3. University of Santiago de Compostela, Spain, May 7 – June 10, 2012.
2. Indian Statistical Institute, Bangalore, India, Aug 10 – Sept 10, 2011.
1. University of Santiago de Compostela, Spain, April 18 – May 18, 2011.

## Languages

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- English, Hindi, Malayalam and Gujarati.

## Computer Skills

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- L<sup>A</sup>T<sub>E</sub>X, GAP.

## References

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| <ul style="list-style-type: none"><li>• Prof. Luise-Charlotte Kappe<br/>Department of Mathematical Sciences<br/>Binghamton University<br/>Binghamton, NY 13902-6000<br/><a href="mailto:menger@math.binghamton.edu">menger@math.binghamton.edu</a><br/>Cell Phone: 607 222 4843.</li></ul> | <ul style="list-style-type: none"><li>• Prof. Manuel Ladra<br/>Department of Mathematics<br/>University of Santiago de Compostela<br/>Spain<br/><a href="mailto:manuel.ladra@usc.es">manuel.ladra@usc.es</a><br/>Phone: +34 881813138</li></ul>                                   |
| <ul style="list-style-type: none"><li>• Prof. Adrian Vasiu<br/>Department of Mathematical Sciences<br/>Binghamton University<br/>Binghamton, NY 13902-6000<br/><a href="mailto:adrian@math.binghamton.edu">adrian@math.binghamton.edu</a><br/>Office Phone: 607-777-6036.</li></ul>        | <ul style="list-style-type: none"><li>• Prof. Marcin Mazur<br/>Department of Mathematical Sciences<br/>Binghamton University<br/>Binghamton, NY 13902-6000<br/><a href="mailto:mazur@math.binghamton.edu">mazur@math.binghamton.edu</a><br/>Office Phone: 607-777-6540.</li></ul> |