CURRICULUM VITAE

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Institution: Indian Institute of Technology Roorkee
Date of Birth: 12-June-1982
Academic Qualifications:

- **PhD** in Mathematics from International Max-Planck Research School at Otto-von-Guericke University, Magdeburg, Germany with grade 1(Very Good), (2010)
- **MSc** in Applied Mathematics from Indian Institute of Techology Roorkee, Roorkee, India, (2005)

Ph.D thesis title, Guide's Name, Institute/Organization/University:

Ph.D thesis title:
Mathematical and Numerical Analysis for Coagulation-Fragmentation Equations
Guide's Name: Prof. Gerald Warnecke
Institute/ University: International Max-Planck Research School (IMPRS)
Institute for Analysis and Numerics
Otto-von-Guericke University Magdeburg, GERMANY

Research Interests :
Partial integro-differential equations, Coagulation and fragmentation processes, Stochastic PDEs, Regularization theory for inverse problems

Work experience (in chronological order) :

June 2010 – April 2012	**Post-Doctoral Fellow** Chair for Applied Mathematics Montan University Leoben, Austria.
Oct 2011 – March 2012	**Lecturer** Technical University of Graz, Austria
May 2012 – June 2014	**Research Scientist** Johann Radon Institute for Computational and Applied Mathematics (RICAM), Austrian Academy of Sciences (ÖAW)
June 2014 – June 22, 2017	**Assistant Professor** Department of Mathematics Indian Institute of Technology Roorkee Pay Sale: **PB3- Rs. 8000 AGP**
June 23, 2017 – till date	**Assistant Professor** Department of Mathematics Indian Institute of Technology Roorkee Pay Sale: **PB4- Rs. 9000 AGP/ 13A1**

Professional Recognition/Award/Prize/Certificate, Fellowship received by the applicant:

1. Served as referee for Journals such as `Proceedings of Royal Society of London A, Journal of Mathematical Analysis and Applications, Inverse Problems and Imaging, Proceedings of National Academy of Sciences, Physical Sciences (NASA), Mathematical Methods in Applied Sciences, Applications of Mathematics, Korean Journal of Chemical Engineering, Differential Equations and Dynamical Systems` etc

2. Foreign examiner for PhD thesis of Dr. Joel Luke Oluwaseye on *Mathematical and Numerical Analysis of the Discrete Fragmentation-Coagulation Equation with Growth, Decay and Sedimentation* at University of Kwazulu-Natal, Westville Campus, South Africa

3. Postdoctoral fellowship by Austrian Academy of Sciences (May 2012-June 2014)

4. Offered a European Research Council (ERC) postdoctoral fellowship at INRIA Nancy, France 2012 (utilized alternative offers)

5. FWF Austrian Science postdoctoral fellowship at Montan University Leoben, Austria (June 2010-April 2012)

6. International Max-Planck Research School (IMPRS) Ph.D. Scholarship at Otto-von-Guericke University, Magdeburg, Germany (July 2007-May 2010)

7. Membership in Max Planck Research Institute

8. Offered a Erasmus Mundus Fellowship for M.S. in Industrial Mathematics and scientific computing at TU Eindhoven, Netherlands and TU Kaiserslautern, Germany 2007 (utilized alternative offers)

Recent Visiting Positions:

1. Visiting Researcher at Instituto Superior Tcnico (IST)- Center for Mathematical Analysis, Geometry and System Dynamics (CAMGSD),Lisbon, Portugal, June 30- July 12, 2018 (partially Funded by IST Lisbon) (Invited by Prof. Fernando Da Costa and Prof. Joaquim Correia)

2. Visiting Researcher at LAMFA, Universite de Picardie Jules Verne, Amiens, France, June 23-30, 2018. (Partially Funded by LAMFA) (Invited by Prof. Youcef Mammeri)

3. Visiting Researcher at Max-Planck Institute, Leipzig, Germany, June 6-8, 2016. (Funded by MPI Leipzig) (Invited by Prof. Benjamin Gess)

4. Visiting Position at Otto-von-Guericke Unveristy, Magdeburg,, Germany June 8-10, 2016 (Funded by OVGU Magdeburg) (Invited by Prof. Gerald Warnecke)

PhD Thesis Supervision:

01 (Completed), 01(Submitted), 03(In progreess)

Dr. Prasanta Kumar Barik
Thesis Title: *Nonsingular and singular coagulation models with linear and nonlinear breakage*
Status: Completed on September 14, 2018
Current Position: Postdoctoral Fellow at TIFR-CAM, Bangalore, India

Vivek Kumar
Thesis title: *On well-posedness for generalized stochastic Burgers-type equations*
Status: Submitted on January 28, 2019

Pooja Rai (*Analysis and numerical approximations to Oort-Hulst-Safronov models*)
Status: In progress

Gaurav Mittal (*Variational and iterative regularization methods for inverse problems*)
Status: In progress

Mashkoor Ali (*Semigroup theory for Population Balance Models*)
Status: In progress

Master Thesis Supervision: 07 (MSc), 01 (MTech) completed

International Collaborators:

1. Prof. Gerald Warnecke, Otto-von-Guericke University, Magdeburg, Germany
2. Prof. Philippe Laurencot, CNRS, University of Toulouse, France
3. Prof. Erika Hausenblas, Montan University Leoben, Austria
4. Prof. Otmar Scherzer, RICAM University of Vienna, Austria
5. Prof. Atulya Nagar, Liverpool Hope University, UK
6. Prof. Jacek Banasiak, University of Pretoria, South Africa
7. Prof. Fernando Da Costa, University of Aberta and IST Lisbon, Portugal
8. Prof. Volker John, WIAS, Berlin, Germany
9. Prof. Joaquim Correia, University of Evora, Portugal

International Collaborators Invited at IIT Roorkee:

1. Prof. Jacek Banasiak, University of Pretoria, South Africa (November 19-30, 2018)
2. Prof. Fernando Da Costa, Universrity of Aberta and IST Lison, Portugal (January 13-25, 2019)
3. Prof. Youcef Mammeri, LAMFA, Universite de Picardie Jules Verne, Amiens, France (January 13-16, 2019)
4. Prof. Nabil Bedjaoui, LAMFA, Universite de Picardie Jules Verne, Amiens, France (January 13-16, 2019)
5. Prof. Marilia Pires, University of Evora, Portugal (January 13-16, 2019)

List of Publications:

(a) Books/Monographs:

1. Ankik Kumar Giri: Mathematical and Numerical Analysis for Coagulation-Fragmentation Equations, *VDM Verlag Dr. Müller, Saarbruecken, Germany, ISBN- 978-3639375244, 2011.*

(b) Preprints:

1. A.K. Giri, and G. Mittal: Convergence rates of nonlinear analysis in Banach spaces via Hölder stability estimates, In progress *arXiv:1805.11854*

2. G. Mittal, and A.K. Giri: Convergence rates for iteratively regularized Landweber iteration method for nonlinear inverse problems via Hölder stability estimates, In progress *arXiv: 1805.01922*

3. P.K. Barik, and A.K. Giri: Existence and uniqueness of weak solutions to the singular coagulation equation with collisional breakage, In progress *arXiv:1806.03911*

4. G. Mittal, and A.K. Giri: Hölder convergence analysis of Tikhonov regularization for linear inverse problems, In progress.

5. P.K. Barik, and A.K. Giri: Weak solutions to the continuous coagulation model with collisional breakage, Submitted.

6. P.K. Barik, and A.K. Giri: Global classical solutions to the continuous coagulation equation with collisional breakage, Submitted

(C) Published in Journals:

1. V. Kumar and A.K. Giri: Generalized stochastic Burgers' equation with non-Lipschitz diffusion coefficient, *Commun. Stoch. Anal., 12(3), 329-342, 2018.*

2. P.K. Barik, A.K. Giri, and Ph. Laurençot: Mass-Conserving solutions to the Smoluchowski coagulation equations with singular kernel, *Proceedings of Royal Society Edinburgh A, DOI:10.1017/prm.2018.158, 2018.*

3. P.K. Barik, and A.K. Giri: A note on mass-conserving solutions to the coagulation-fragmentation equation by using non-conservative approximation, *Kinetic and Related Models*, 11: 1125-1138, 2018.

4. A.K. Giri, and A.K. Nagar: Convergence of the cell average technique for Smoluchowski coagulation equation, *ESAIM: Mathematical Modelling and Numerical Analysis (M2AN), 49 (2), 349-372, 2015.*

5. Ankik Kumar Giri: On the uniqueness for coagulation and multiple fragmentation equation, *Kinetic and Related Models (KRM), 6(3): 589-599, 2013.*

6. Erika Hausenblas and Ankik Kumar Giri: Stochastic Burgers equation with a polynomial nonlinearity driven by Levy processes, *Commun. Stoch. Anal. (COSA), 7(1): 91-112, 2013.*

7. Ankik Kumar Giri and Erika Hausenblas: Convergence analysis of sectional methods for solving aggregation population balance equations-I: the fixed pivot technique, *Nonlinear Analysis: Real World Applications, 14: 2068-2090, 2013.*

8. Ankik Kumar Giri, Philippe Laurencot and Gerald Warnecke: Weak solutions to the continuous coagulation equation with multiple fragmentation, *Nonlinear Analysis: Theory, Methods and Applications, 75: 2199-2208, 2012.*

9. Ankik Kumar Giri and Gerald Warnecke: Uniqueness for the coagulation- fragmentation equations with strong fragmentation, *Z. Angew. Math. Phys.(ZAMP), 62: 1047-1063, 2011.*

10. Ankik Kumar Giri, Jitendra Kumar and Gerald Warnecke: The continuous coagulation equation with multiple fragmentation, *J. Math. Anal. Appl., 374: 71-87, 2011.*

11. Ankik Kumar Giri and Erika Hausenblas: Convergence of the fixed pivot technique for continuous Smoluchowski coagulation equation, *Proc. Appl. Math. Mech., 11: 701-702, 2011*

International Conference/ Workshop Proceedings

1. A.K. Giri, M. V. de Hoop, O. Scherezer, L. Qiu: Hölder convergence rates of Tikhonov regularization for solving nonlinear ill-posed problems, Conference on Inverse Problems and Applications, 2-6th April 2013, Linkoping University, Sweden.

2. A.K. Giri: Convergence of the fixed pivot technique for continuous Smoluchowski coagulation equation, GAMM 82th Annual Meeting of the International Association of Applied mathematics and Mechanics, 18th-21th April 2011, page 337-338, TU Graz, Austria.

3. A.K. Giri, G. Warnecke: Numerical analysis for aggregation problems, 3rd International Max-Planck Research School Worshop 25th-26th March 2010, Alexisbad, Selketal, Harz Mountains, Germany.

4. A.K. Giri, G. Warnecke: Convergence analysis of sectional methods for solving aggregation population balance equations,9th Hirschegg Conference on Conservation Laws, 6th-12th September 2009, Hirschegg, Austria.

5. A.K. Giri, G. Warnecke: Sectional methods for solving aggregation population balance equations, IChemE worshop on population balance modeling, 30th June-1st July 2009, Page 23-27, University of Cambridge, UK.

6. A.K. Giri: Mathematical analysis of aggregation-breakage equations, 2nd International Max-Planck Research School Workshop, 19th-20th March 2009, page 1-13, Tangermuende, Germany.

7. A.K. Giri: Introduction to aggregation-breakage equations, 1st International Max-Planck Research School Workshop, 16th-17th June 2008, page no. 135-136, Lutherstadt, Wittenberg, Germany.

8. A.K. Giri, and G. Warnecke: A numerical scheme for solving coagulation-fragmentation equations, 6th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2008), Kos, Greece, September 16-20, 2008.

Invited Talks/Lectures (Since joined IIT Roorkee)

1. Invited speaker at INDO-FRENCH (IFCAM) workshop on "Theorey and Simulation of Hyperbolic PDEs arising in Mathematical Biology and Fluid Flow" at BITS Pilani, January 05-11, 2019

2. Invited talk at Portuguese Mathematical Society Meet (ENSPM 2018) at Braganca, Portugal, July 9-11, 2018.

3. Invited Lecture at IST-CAMGSD Lisbon, Lisbon, Portugal, July 4th 2018.

4. Invited Lecture at LAMFA Mathematics Lab at Universite de Picardie Jules Verne, Amiens, France, June 27th, 2018.

5. A series of invited lectures in the workshop on "High Performance Scientific Computing" at IISER Thiruvanathapuram Trivandrum, India, June 6-10, 2016.

6. A series of invited lectures in GIAN program on" Modeling analysis and simulation of coagulant fluid" conducted at IIT Bhubaneshwar, Bhubaneshwar, India July 25-29, 2016.

7. Invited lecture at Max-Planck Institute Leipzig Leipzig, Germany, September 6-7, 2016.

8. Invited Talk in "Conference on Recent Advances in Analysis and Numerics of Hyperbolic Conservation Laws" at Otto-von-Guericke University Magdeburg Magdeburg, Germany, September 8-10, 2016

9. Invited talk in "International Conference on Numerical Methods for Partial Differential Equations", Panjab University Chandigarh, India December 5-9, 2016

10. Contributed talk in "International Joint Meeting of AMS/EMS/SPM 2015", Porto, Portugal June 10-13, 2015.

11. Invited talk in "Conference on Computational PDE 2015" TIFR-CAM Bangalore Dec. 21-23, 2015.

12. Invited talk in "International conference on Current trends in PDEs: Theory and Computations" at South Asian University, New Delhi, Dec. 28 - 30, 2015.

Workshop organized/approved (Since joined IIT Roorkee)

1. West Asia Mathematical School (WAMS) partially supported by CIMPA on "Recent Developments and Applications of Partial Differential Equations, from Theory to Simulation (RDAPDEs)" to be held at IIT Roorkee, India, August 29-September 03, 2019

2. INDO-FRENCH (IFCAM) workshop on "Theorey and Simulation of Hyperbolic PDEs arising in Mathematical Biology and Fluid Flow" will be held at BITS Pilani, India, January 17-23, 2019. (One of the organizers)

3. GIAN course on "Population Balance Equations with Applications" at IIT Roorkee, November 26-30, 2018.

4. Workshop on "High Performance Scientific Computing", Sponsored by INTEL and Calligo Technologies Pvt. Ltd., August 26-27,2016.

Research Projects and Funded programs

1. Faculty Initiation Grant, IIT Roorkee, 2015-2018. (Completed)

2. Coagulation-fragmentation models: Well-posedness, Numerical approximations and Asymptotic analysis, Young Scientist, SERB-DST, New Delhi. (On-going)

3. Multinational Erasmus$^+$ Capacity Buildling and Mobility Porject with several institutes from Europe, UK, Asia and Canada, Proposal Submitted. (With Prof. Joaquim Correia, University of Evora, Portugal)

4. Indo-German Joint research proposal on "Analysis and Numerical Methods for Population Balance Equations", Approved. (with Prof. Volker John, WIAS Berlin)

Administrative responsibilites in the institute

At Department Level: Convener for Department Faculty Search Committee (2015-2017)
At Institute Level: Warden for Student Hostel (Cautley Bhawan) (2017-till date)
At Department Level: Department Website officer in Charge (2018-till date)