# Ranjan Kumar Das


CONTACT/PERSONAL INFORMATION

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Nationality: Indian
Date of Birth: 15th May 1989
Gender/Marital status: Male/Unmarried
Languages known: English, Hindi, Odia


RESEARCH AREAS

Numerical Linear Algebra and Matrix Theory.

**Research Interests:** Linear and Nonlinear Eigenvalue Problems: Linearizations of Polynomial and Rational Matrices, Distance Problems for Polynomial and Rational Matrices, Perturbation Theory for Rational Eigenvalue Problems.

PUBLICATIONS

**Published:**

1. R. K. DAS AND R. ALAM, *Affine spaces of strong linearizations for rational matrices and the recovery of eigenvectors and minimal bases*, Linear Algebra Appl., 569 (2019), pp. 335–368.
   https://doi.org/10.1016/j.laa.2019.02.001
2. R. K. DAS AND R. ALAM, *Recovery of minimal bases and minimal indices of rational matrices from Fiedler-like pencils*, Linear Algebra Appl., 566 (2019), pp. 34–60.
   https://doi.org/10.1016/j.laa.2018.12.021
3. R. K. DAS AND R. ALAM, *Automatic recovery of eigenvectors and minimal bases of matrix polynomials from generalized Fiedler pencils with repetition*, Linear Algebra Appl., 569 (2019), pp. 78–112.
   https://doi.org/10.1016/j.laa.2019.01.013

**Communicated/Preprints:**

4. R. K. DAS AND R. ALAM, *Structured strong linearizations of structured rational matrices.* (Communicated).
5. R. K. DAS AND R. ALAM, *Palindromic linearizations of palindromic matrix polynomials.* (Communicated).
6. R. K. DAS AND R. ALAM, *Extended generalized Fiedler pencils with repetition of matrix polynomials and recovery of eigenvectors, minimal bases and minimal indices.* (Under preparation).
7. R. K. DAS AND R. ALAM, Algorithms for constructing (generalized-)Fiedler pencils with repetition of polynomial and rational matrices. (Under preparation).

EDUCATION

**Doctor of Philosophy (PhD) in Mathematics**, (July 2013 – August 2019)
*Department of Mathematics*
Indian Institute of Technology Guwahati, India.

- Thesis Title: "`Strong Linearizations of Polynomial and Rational Matrices and Recovery of Spectral Data`"
- Thesis Advisor: Prof. Rafikul Alam
- Thesis submission: 01 April 2019
- PhD degree received: 30 August 2019

**Master of Science (MSc) in Mathematics**, (July 2010 – June 2012)
*Department of Mathematics*
Indian Institute of Technology Kanpur, India.

**Bachelor of Science (BSc) in Mathematics**, (July 2006 – June 2009)
*Department of Mathematics*
Gangadhar Meher Autonomous College, Odisha, India.

**Higher Secondary Examination** (Science stream), (July 2004 – May 2006)
*Deogarh College, Deogarh, Odisha, India*
Council of Higher Secondary Education, Odisha.

**High School Certificate Examination** (June 2004)
*Sabari Vidya Bhawan, MV-79, Malkangiri, Odisha, India*
Board of Secondary Education, Odisha.

## Honors and Awards

- Qualified CSIR-NET 2013 in Mathematical Sciences with all India rank 42.
- Qualified GATE 2013 in Mathematics with all India rank 94
- Awarded MHRD scholarship for pursuing Ph.D. at IIT Guwahati.
- Qualified JAM 2010 in Mathematics with all India rank 15.

## Academic Experience

**Indian Institute of Technology Guwahati**, India

*Teaching Assistant:*

MA 101 Mathematics I (Linear Algebra and Calculus) in **July-Nov 2014, 2015, 2016**
MA 102 Mathematics II (Multivariable Calculus and Ordinary Differential Equations) in **Jan-May 2016**

*Lab Instructor:*

MA 571 (Numerical Linear Algebra) in **Jan-May 2015, 2017**
MA 423 (Matrix Computations) in **July-Nov 2017**

## Workshop Attended

Advanced Instructional Schools on Matrix Analysis (02-21 May, 2016), Shiv Nadar University, Greater Noida, Uttar Pradesh - 201314, India.

## Conference Presentations

- Affine spaces of strong linearizations for rational matrices and the recovery of eigenvectors and minimal bases, *9th International Congress on Industrial and Applied Mathematics-ICIAM 2019 (15-19 July, 2019), University of Valencia, Valencia, Spain.*
- Extended generalized Fiedler pencils for matrix polynomials and the recovery of eigenvectors and minimal bases, *SIAM Conference on Applied Linear Algebra (04-08 May, 2018), Hong Kong Baptist University, Hong Kong.*
- Generalized Fiedler pencils with repetition for polynomial eigenproblems and the recovery of eigenvectors, minimal bases and minimal indices, *International Conference on Linear Algebra and its Applications (11-15 December, 2017), Manipal University, Manipal-576104, Karnataka, India.*
- Solving rational eigenvalue problem by constructing a new family of pencils, *National Conference on "Advances in Mathematical Sciences" (22-23 December, 2016), Gauhati University, Guwahati-781014, Assam, India.*

## Computer Skills

MATLAB, LaTeX, C, FORTRAN

## References


- Prof. Rafikul Alam (Thesis Supervisor)
  Department of Mathematics,
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  Institut für Mathematik
  Technische Universität Berlin, Germany.
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- Prof. Shreemayee Bora
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- Prof. Rajen Kumar Sinha
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