CURRICULAM VITAE

Personal Details

Name	**:**	**Koeli Ghoshal**
Position	**:**	Associate Professor Department of Mathematics Indian Institute of Technology (IIT) Kharagpur 721 302 Phone No - -03222 283666 (O) Email: **koeli@maths.iitkgp.ernet.in** **drmrsk@yahoo.co.in**
Present address	**:**	B-266, IIT Campus, Kharagpur-721 302 Phone No - -03222 283667 (R) Mobile- +91 9830362053
Permanent address	**:**	60/13, N. C .Moitra Street Kolkata-700 035 Phone No - +91-033-2577 2236 (R)

Educational Qualifications

- Ph. D. done in Applied Mathematics (Fluid Dynamics) from Indian Statistical Institute, Kolkata (Degree awarded by Jadavpur University), 2005.
- M.Sc. done in Applied Mathematics from Burdwan University in 1996 (secured First class)
- B.Sc. (Hons) done in Mathematics under Burdwan University in 1994 (secured First class)

Title of the thesis:

On velocity and suspension concentration in a sediment-laden flow: Experimental and theoretical studies.

Work experiences:

- From 4th April, 2016 working as **Associate Professor** in the Department of Mathematics of IIT, Kharagpur.
- From 19th February 2007 to 3rd April 2016 worked as **Assistant Professor** in the Department of Mathematics of IIT, Kharagpur.
- Worked as a **Research Associate** from September 2006 to 18th February 2007 at PAMU of ISI, Calcutta.
- Worked as a **Visiting Scientist** from November 2005 to June 2006 at PAMU of ISI, Calcutta.
- Worked as a **Research Fellow** at Fluvial Mechanics Laboratory, Physics and Applied Mathematics unit (PAMU) at Indian Statistical Institute (ISI), Calcutta with Professor B. S. Mazumder from November 1999 to October 2005.

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Research Area:

- Turbulent flow in open channel
- Sediment transport
- Grain-size distribution
- Mathematical Modelling
- Secondary current
- Entropy theory

Publications in Journals: (SCI = Science Citation Index, IF = Impact Factor)

After joining IIT

1. Debasish Pal and Koeli Ghoshal (Accepted 2016), Theoretical modeling of suspended grain-size distribution in fluvial environment by stratification and secondary current approaches, ***Environmental Fluid Mechanics***, **SCI Expanded and IF: 1.394,** Publisher: **Springer.**

2. Snehasis Kundu and Koeli Ghoshal (Accepted 2016), A Mathematical model for type II profile of concentration distribution in turbulent flows, ***Environmental Fluid Mechanics***, **SCI Expanded and IF: 1.394,** Publisher: **Springer.**

3. Snehasis Kundu and Koeli Ghoshal (Accepted 2016), An entropy based model for velocity-dip-position, ***Journal of Environmental Informatics***, **SCI Expanded and IF 3.857**, Publisher: **International Society for Environmental Information Sciences.**

4. Debasish Pal and Koeli Ghoshal (2016), Effect of particle concentration on sediment and turbulent diffusion coefficients in open channel turbulent flow, ***Environmental Earth Sciences***, Vol 75(18), article no 1245. **SCI Expanded and IF 1.765**, Publisher: **Springer.**

5. Manotosh Kumbhakar, Snehasis Kundu, Koeli Ghoshal and Vijay P. Singh (2016), Entropy-based modeling of velocity lag in sediment-laden open channel turbulent flow, ***Entropy,*** Vol 18(9), article no 318. **SCI Expanded and IF: 1.743,** Publisher: **MDPI.**

6. Manotosh Kumbhakar, Koeli Ghoshal and Vijay P. Singh (2017), Derivation of Rouse Equation for sediment concentration using Shannon Entropy, ***Physica A: Statistical Mechanics and its Applications,*** Vol 465, pp 494-499. **SCI and IF: 1.785,** Publisher: **Elsevier**.

7. Manotosh Kumbhakar and Koeli Ghoshal (Accepted 2016), One Dimensional velocity distribution in open channels using Renyi entropy, ***Stochastic Environmental Research and Risk Assessment.*** **SCI and IF: 2.237,** Publisher: **Springer**.

8. Manotosh Kumbhakar and Koeli Ghoshal (2016), Two dimensional velocity distribution in open channels using Renyi entropy, ***Physica A: Statistical Mechanics and its Applications,*** Vol 450, pp 546-559**. SCI and IF: 1.785,** Publisher: **Elsevier**.

9. Debasish Pal and Koeli Ghoshal (2016), Vertical distribution of fluid velocity and suspended sediment in open channel turbulent flow, ***Fluid Dynamics Research***, Vol 48(3), pp 1-27. **SCI Expanded and IF: 0.846,** Publisher: **Institute of Physics.**

10. Debasish Pal, Sanjeev K. Jha and Koeli Ghoshal (2016), Velocity lag between particle and liquid in sediment-laden open channel turbulent flow, ***European Journal of Mechanics B/Fluids,*** Vol 56, pp 130-142. **SCI and IF: 1.418,** Publisher: **Elsevier**.

11. Debasish Pal and Koeli Ghoshal (2015), Grain-size distribution in open channel by mixing length approach *by* ***Environmetrics*** Vol 26(2), pp 107-119. **SCI and IF: 1.16**, Publisher: **Wiley.**

12. Mukulika Brahma, Prasanta Kumar Das and Koeli Ghoshal (2015), Unique shapes of liquid bells as a function of flow parameters: A brief overview and some new results *by*. ***European Journal of Mechanics B/Fluids,*** Vol 50, pp 98-109. **SCI and IF: 1.418,** Publisher: **Elsevier.**

13. Snehasis Kundu and Koeli Ghoshal (2014), Effects of secondary current and stratification on suspension concentration in an open channel flow, ***Environmental Fluid Mechanics***, Vol 14(6), pp 1357-1380. **SCI Expanded and IF: 1.394,** Publisher: **Springer.**

14. Koeli Ghoshal and Debasish Pal (2014), Grain-size distribution in suspension over a sand-gravel bed in an open channel flow, ***International Journal of Sediment Research***, Vol 29 (2), 2014, pp 184-194. **SCI Expanded and IF: 1.388,** Publisher: **Elsevier.**

15. Debasish Pal and Koeli Ghoshal (2014), Effect of bed roughness on grain-size distribution in an open channel flow, ***Journal of Hydro-environment research***, Vol 8(4), 2014, pp 441-451. **SCI Expanded and IF: 1.971,** Publisher: **Elsevier.**

16. Debasish Pal and Koeli Ghoshal (2014), Mathematical model on grain-size distribution in suspension over sand-gravel bed, ***Journal of Hydrology***, Vol 511, 2014, pp 640-647. **SCI and IF: 3.043,** Publisher: **Elsevier.**

17. Koeli Ghoshal and Debasish Pal (2014), An analytical model for bedload layer thickness, ***Acta Mechanica***, Vol 225(3), pp 701-714. **SCI and IF: 1.694**, Publisher: **Springer.**

18. Snehasis Kundu and Koeli Ghoshal (2014), Explicit formulation for suspended concentration distribution with near-bed particle deficiency, ***Powder Technology***,Vol 253, 2014, pp 429-437. **SCI and IF: 2.759,** Publisher: **Elsevier.**

19. Snehasis Kundu and Koeli Ghoshal (2014), Concentration distribution in an open channel flow by observational approach ***ISH Journal of Hydraulic Engineering***, Vol 20(1), pp 75-89. Publisher: **Taylor and Francis**.

20. Debasish Pal and Koeli Ghoshal (2013), Hindered settling with an apparent particle diameter concept, ***Advances in Water Resources***, Vol 60, pp 178-187. **SCI and IF: 4.349**, Publisher: **Elsevier**.

21. Koeli Ghoshal and Snehasis Kundu (2013), Influence of secondary current on vertical concentration distribution in an open channel flow, ***ISH Journal of Hydraulic Engineering***, Vol 19(2), pp 88-96. Publisher: **Taylor and Francis.**

22. K. Ghoshal, Rahul Mazumder, C. Chakraborty and B. S. Mazumder (2013), Turbulence, suspension and downstream fining over a sand-gravel mixture bed, ***International Journal of Sediment Research***, Vol 28(2), 2013, pp 194-209. **SCI Expanded and IF: 1.388,** Publisher: **Elsevier.**

23. Snehasis Kundu and Koeli Ghoshal (2013), An explicit model for concentration distribution using biquadratic-log-wake-law in a sediment-laden open channel flow, ***Journal of Applied Fluid Mechanics***, Vol 6(3), 2013, pp 339-350. **SCI Expanded and IF: 0.888**, Publisher: **Regional information center for science and technology.**

24. Snehasis Kundu and Koeli Ghoshal (2012), An analytical model for velocity distribution and dip-phenomenon in uniform open channel flows, ***International Journal of Fluid Mechanics Research***, Vol 39(5), 2012, pp 381-395. Publisher: **Begell house.**

25. Snehasis Kundu and Koeli Ghoshal (2012), Velocity distribution in open channels: Combination of log-law and parabolic law, ***World Academy of Science, Engineering and Technology***, Vol 68, 2012, pp. 2151-2158. Publisher: Waset.

26. Snehasis Kundu and Koeli Ghoshal (2012), Application of beta, gamma and psi functions in sediment transport, ***Mathematical Sciences International Research Journal***, Vol 1(1), 2012, pp 152-168. Publisher: IMRF.

27. K. Ghoshal, B. Purkait and B. S. Mazumder (2011), Size distributions in suspension over sand-pebble mixture: An experimental approach, ***Sedimentary Geology***, Vol 241, pp 3-12. **SCI and IF: 2.236,** Publisher: **Elsevier.**

28. K. Ghoshal, B. S. Mazumder and B. Purkait (2010), Grain-size distributions of bed load: Inferences from flume experiments using heterogeneous sediment beds, ***Sedimentary Geology***, Vol 223, pp 1-14. **SCI and IF: 2.236,** Publisher: **Elsevier.**

29. Bijoy. S. Mazumder, Dibyendu. K. Pal, Koeli Ghoshal and Satya P. Ojha (2009), Turbulence statistics of flow over isolated scalene and isosceles triangular-shaped bedforms, ***Journal of Hydraulic Research,*** **IAHR,** Vol 47(5), pp 626-637. **SCI and IF: 1.471,** Publisher: **Taylor and Francis.**

Before joining IIT

30. K. Ghoshal and B. S. Mazumder (2006), Velocity and concentration distribution in sediment-mixed fluid: An approach with mixing length concept, ***ISH Journal of Hydraulic Engineering***,Vol 12(3), 2006, pp 20-28. Publisher: **Taylor and Francis**.

31. B. S. Mazumder, D. K. Pal, K. Ghoshal and S. P. Ojha (2006), Contributions of burst-sweep cycles to the Reynolds shear stress over the waveform structures, ***ISH Journal of Hydraulic Engineering,*** Vol 12(2), pp 66-77. Publisher: **Taylor and Francis.**

32. B. S. Mazumder and K. Ghoshal (2006), Velocity and concentration profiles in uniform sediment-laden flow, ***Applied Mathematical Modeling,*** Vol. 30(2), pp 164 -176. **SCI and IF: 2.291**, Publisher: **Elsevier**.

33. K. Ghoshal and B. S. Mazumder (2005), Sediment-induced stratification in a turbulent open-channel flow, ***Environmetrics,*** Vol. 16 (7)**,** 2005, pp. 673-686. **SCI and IF: 1.514**, Publisher: **Wiley.**

34. B. S. Mazumder, K. Ghoshal and D. C. Dalal (2005), Influence of bed roughness on sediment suspension: Experimental and theoretical studies, ***Journal of Hydraulic Research***, IAHR, Vol 43(3), pp 245-257. **SCI and IF: 1.471,** Publisher: **Taylor and Francis.**

35. B. S. Mazumder and K. Ghoshal (2002), Velocity and suspension concentration in sediment-mixed fluid *by* ***International Journal of Sediment Research***, Vol 17(3), pp 220-232. **SCI Expanded and IF: 1.388,** Publisher: **Elsevier.**

Reviewer

(i) Earth surface processes and Landforms (Publisher: Wiley)
(ii) Sedimentary Geology (Publisher: Elsevier)
(iii) Environmental Earth Sciences (Publisher: Springer)
(iv) Journal of Applied Fluid Mechanics (Publisher: RICST)
(v) International Journal of Sediment Research (Publisher: Elsevier)
(vi) Journal of Hydrologic Engineering (Publisher: ASCE)
(vii) Indian Society for Hydraulics (Publisher: Taylor and Francis)

Conference Proceedings

- A study on the β-factor in sediment-laden flow through open channels by Koeli Ghoshal and Manotosh Kumbhakar, Proceedings of International Conference on Hydraulics, Water Resources and Coastal Engineering, **HYDRO-2016**, CWPRS Pune, India, 8^{th}-10^{th} December 2016, **Indian Society for Hydraulics**, 2016, pp 789-793.

- A study on velocity and concentration distribution in an open channel flow by Koeli Ghoshal and Debasish Pal, **58^{th} congress of ISTAM**, 18^{th}-21^{st} December 2013, **Bengal Engineering and Science University, Shibpur** (presently Indian Institute of Engineering Science and Technology, Shibpur).

- Velocity distribution in open channels: Combination of log-law and parabolic law by Snehasis Kundu and Koeli Ghoshal, **International Conference held in Paris, France** during August, 2012 organized by World Academy of Science, Engineering and Technology, Vol 68, 2012, pp. 2151-2158.

- Effect of secondary currents on concentration distribution in open channel flows *by* Koeli Ghoshal and Snehasis Kundu, In: Proceedings of International Conference on Hydraulics, Water Resources and Ocean Engineering, **HYDRO-2012, IIT Mumbai, Indian Society for Hydraulics,** 2012, pp. 385-394.

- Velocity distribution with dip phenomenon in sediment-laden flow *by* Snehasis Kundu and Koeli Ghoshal, In: Proceedings of International Conference on Hydraulics, Water Resources and Ocean Engineering, **HYDRO-2011, SUVNIT Surat, Indian Society for Hydraulics,** 2011, pp 787-794

- Velocity and concentration distributions in a sediment-laden flow using modified mixing length (with B. S. Mazumder), In: Proceedings of International Conference on Hydraulics, Water Resources and Ocean Engineering, **HYDRO-2005, Indian Society for Hydraulics,** 2005, pp. 617-625.

- Turbulent statistics of flow over waveform structures (with B. S. Mazumder, D. K. Pal and S. P. Ojha), In: Proceedings of International Conference on Hydraulics, Water Resources and Ocean Engineering, **HYDRO-2004, Indian Society for Hydraulics,** 2004.

- Turbulence characteristics over artificial waveforms and its implication on sediment transport, (with B. S. Mazumder, D. K. Pal and S. P. Ojha), In: Proceedings of International Conference on Hydraulic Engineering: Research and Practice, 2004, **Indian Institute of Technology, Roorkee**, pp. 204-214.

- Effect of bed roughness on suspended sediments (with B. S. Mazumder and D. C. Dalal), In: **Shallow Flows**, (Jirka & Uijttewaal eds), Balkema Publishers Leiden, The Netherlands, 2004, pp. 503-509.

- Measurements of turbulent flow over an artificial wave form in an open channel by 3-D Acoustic Doppler Velocimeter, (with B. S. Mazumder, K. K. Mondal and D. K. Pal), In: Proceedings of Conference on Hydraulics, Water Resources and Ocean Engineering, **HYDRO-2003, Indian Society for Hydraulics,** 2003, pp. 398-405.

- Stratification effects in a sediment-laden turbulent flow, (with B. S. Mazumder), In: Proceedings of Conference on Hydraulics, Water Resources and Ocean Engineering, **HYDRO-2003, Indian Society for Hydraulics,** 2003, pp. 161-165.

Professional recognition, awards, fellowships received:

(i) Selected among **Teachers Receiving Top Teaching Feedback Responses** in the Academic session 2016-2017 at IIT, KGP for teaching **Linear Algebra** for 2^{nd} year undergraduate students.

(ii) Selected among **Teachers Receiving Top Teaching Feedback Responses** in the Academic session 2015-2016 at IIT, KGP for teaching **Maths-II** for 1^{st} year undergraduate students.

(iii) Selected among **Teachers Receiving Top Teaching Feedback Responses** in the Academic session 2014-2015 at IIT, KGP for teaching **Maths-II** for 1^{st} year undergraduate students.

(iii) Selected for the award of **Young Scientist fellowship** in the SERC FAST TRACK Proposal of Department of Science and Technology (DST), New Delhi.

(iv) Received **G. M. Nawathe award** for best paper in the conference in HYDRO-2002, Indian Society for Hydraulics, Pune.

(v) Fellowship received from Department of Science and Technology (DST), New Delhi and Council of Scientific and Industrial Research (CSIR), New Delhi as Research Fellow.

(v) National Scholarship holder

Students' Awards/Recognition

- Dr. Debasish Pal received **Prof. U. C. Kothyari Best Ph.D. Thesis Award 2016** from the **Indian Society for Hydraulics**.

- Dr. Snehasis Kundu received **Young Scientist Award** in December 2016 from **Venus International Foundation**, Chennai.

Project undertaken as Principal Investigator

Title: Flow perturbation and sediment suspension over sandy bedforms: Theoretical and experimental studies.
Duration: 1st January, 2008 – 31st December, 2010

Sponsored Agency: DST, MHRD.

Ongoing Project

Title: Theoretical investigation on turbulent features and concentration distribution in an open channel flow. (*Sanctioned in October 2016, fund released on 12th January, 2017*)

Sponsored Agency: SERB, DST.

Principal Investigator: Dr. Koeli Ghoshal
Co-Principal Investigator: Dr. Jitendra Kumar
Advisor: Prof. Subhasis Dey (Dept. of Civil Engineering)
Total Grant: Rs. 20,71,080/-
Duration: Three years

Teaching at IIT Kharagpur

1. MA10001 Maths 1 (2009, 2010)
2. MA10002 Maths 2 (2011, 2012, 2013, 2014, 2015, 2016, 2017(ongoing))
3. MA20101 Transform Calculus (2007, 2008, 2011)
4. MA20103 Partial Differential Equations (2009, 2012, 2013, 2015)
5. MA 20102 Numerical solution of ordinary and partial differential equations (2008, 2009)
6. MA 20103 Linear Algebra (2013, 2016)
7. MA 40002/MA51004 Integral equation and variational methods (2008, 2009, 2010)
8. MA 40011/MA 51003 Fluid Mechanics (2008)
9. MA 41005 Advanced Numerical Technique (2010)
10. MA 51005 Analytical Mechanics (2015, 2016)
11. Preparatory Mathematics (2010, 2011)

Ph.D. Guidance (completed)

- Dr. Debasish Pal (Single guidance) submitted his thesis on 9th October, 2015 and his defense was held on 29th March, 2016. (Currently working as *Postdoctoral Research Fellow at Engineering Systems and Design Pillar, Singapore University of Technology and Design, 8 Somapah Road, Singapore 487372*).

- Dr. Mukulika Brahma (Joint guidance) submitted her thesis on 6th July, 2015 and her defense was held on 9th February, 2016. (Currently working as *Assistant Professor at Techno India University, Salt Lake, Kolkata*).

- Dr. Snehasis Kundu (Single guidance) submitted his thesis in July, 2014 and his defense was held on 20th January, 2015. (Currently working as *Assistant Professor at International Institute of Information Technology, Bhubaneswar, Orissha*).

Ph.D. Guidance (ongoing)

- Mr. Manotosh Kumbhakar (Single Guidance) is pursuing for Ph. D. (3rd year ongoing).

- Mr. Punit Jain (Single guidance) is pursuing for Ph. D. (1st year ongoing).

Institute/Departmental Activities

- Worked as Faculty Advisor for 5 year Integrated M.Sc. (Maths and Computing) for five years (from July 2007 to May 2012).

- Worked as examiner in JAM-2007 and scrutinizer in JAM-2008
- Worked as member of time table committee in the department for two years (from 1st July, 2009 to 30th July, 2011)
- Worked as In-charge of Maths Colloquium for two years (2010-2012)
- Worked as Assistant Warden (Mess) in RLB Hall for two years (from 1st October, 2011 to 31st October, 2013).
- Working as Member of Research co-ordination group, Departmental Academic committee, Purchase committee, Computer committee etc.

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