Name: Dr Shikha Mittal

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Specialization	Mathematics
Designation	Assistant Professor
Educational Qualification	Ph.D. ,Jamia Millia Islamia MSc. Mathematics , B.Sc(H) Mathematics, Kirorimal College, University of Delhi. CSIR -NET, GATE
Experience	Teaching : 6.5 years
Research Interest	Chaos Control, Chaos Synchronization, Nonlinear Dynamical Systems.
Membership of Professional / Academic Bodies	**Editorial Board membership** 1. International Journal of Nonlinear Dynamics and Control 2. International Journal of Mathematical Physics
Research Publications	**Journal Publication - 10** **(SCI - 3, SCOPUS – 6, Google Scholar - 1)** 1. Khan, Ayub, and Shikha. "Robust adaptive sliding mode control technique for combination synchronisation of non-identical time delay chaotic systems." *International Journal of Modelling, Identification and Control* 31.3 (2019): 268-277. 2. Bhat, Muzaffar Ahmad, and Shikha. "Complete synchronisation of non-identical fractional order hyperchaotic systems using active control." *International Journal of Automation and Control* 13.2 (2019): 140-157. 3. Khan, Ayub, and Shikha. "Generalization of combination-combination synchronization of n-dimensional time-delay chaotic system via robust adaptive sliding mode control." *Mathematical Methods in the Applied Sciences* 41.9 (2018): 3356-3369. Impact Factor- 3.007 4. Khan, Ayub and Shikha. "Chaotic analysis and combination-combination

synchronization of a novel hyperchaotic system without any equilibria." *Chinese Journal of Physics* 56.1 (2018): 238-251.

5. Khan, Ayub and Shikha. "Combination synchronization of Genesio time delay chaotic system via robust adaptive sliding mode control." *International Journal of Dynamics and Control* (2017): 1-10.
6. Khan, Ayub and Shikha. "Combination synchronization of time-delay chaotic system via robust adaptive sliding mode control." *Pramana* 88.6 (2017): 91. Impact Factor-2.699
7. Ayub, Khan and Shikha. "Dynamical behavior and reduced-order combination synchronization of a novel chaotic system." *International Journal of Dynamics and Control* (2017): 1-15.
8. Khan, Ayub and Shikha. "Increased and reduced order synchronisations between 5d and 6d hyperchaotic systems." *Indian Journal of Industrial and Applied Mathematics* 8.1 (2017): 118-131.
9. Khan, A., and Shikha. "Mixed tracking and projective synchronization of 6D hyperchaotic system using active control." *Int J Nonlinear Sci* 22.1 (2016): 44-53.
10. Khan, Ayub and Shikha. "Hybrid function projective synchronization of chaotic systems via adaptive control." *International Journal of Dynamics and Control* 5.4 (2017): 1114- 1121.

Conference Proceeding (7)

1. Mittal, Shikha, Ahmad Taher Azar, and Nashwa Ahmad Kamal. "Nonlinear Fractional Order System Synchronization via Combination-Combination Multi-switching." *International Conference on Advanced Intelligent Systems and Informatics*. Springer, Cham, 2020.
2. Khan, Ayub, Shikha, and Ahmad Taher Azar. "Combination-Combination Anti-Synchronization of Four Fractional Order Identical Hyperchaotic Systems." *International Conference on Advanced Machine Learning Technologies and Applications*. Springer, Cham, 2019.
3. Singh, Shikha, and Ahmad Taher Azar. "Controlling chaotic system via optimal control." *International Conference on Advanced Intelligent Systems and Informatics*. Springer, Cham, 2019.
4. Ouannas, Adel, Giuseppe Grassi, Ahmad Taher Azar, and Shikha. "New Control Schemes for Fractional Chaos Synchronization." In *International Conference on Advanced Intelligent Systems and Informatics*, pp. 52-63. Springer, Cham, 2018.
5. Khan, A., Shikha., Azar, A. T., & Zhu, Q. (2018, July). Synchronization Between a Novel Integer-Order Hyperchaotic System and a Fractional-Order Hyperchaotic System Using Tracking Control. In *2018 10th International Conference on Modelling, Identification and Control (ICMIC)* (pp. 1-8). IEEE.
6. Azar, Ahmad Taher, Adel Ouannas, and Shikha. "Control of new type of fractional chaos synchronization." *International Conference on Advanced Intelligent Systems and Informatics*. Springer, Cham, 2017.
7. Shikha, et al. "Sliding mode control technique for multi-switching synchronization of chaotic systems." *2017 9th International Conference on Modelling, Identification and Control (ICMIC)*. IEEE, 2017.

Books/Books Chapter/Review	**Books Chapters (11)** 1. Vaidyanathan, Sundarapandian, Aceng Sambas, Ahmad Taher Azar, and Shikha Singh. "A new multistable plasma torch chaotic jerk system, its dynamical analysis, active backstepping control, and circuit design." In *Backstepping Control of Nonlinear Dynamical Systems*, pp. 191-214. Academic Press, 2021. 2. Azar, A. T., Serrano, F. E., Flores, M. A., Kamal, N. A., Ibraheem, I. K., Humaidi, A. J.,... & Mittal, S. (2021). Dynamic self-recurrent wavelet neural network for solar irradiation forecasting. In *Design, Analysis, and Applications of Renewable Energy Systems* (pp. 249-274). Academic Press, 2021. 3. Azar, A. T., Serrano, F. E., Flores, M. A., Kamal, N. A., Ruiz, F., Ibraheem, I. K., ... & Mittal, S. (2021). Fractional-order controller design and implementation for maximum power point tracking in photovoltaic panels. In *Renewable Energy Systems* (pp. 255-277). Academic Press, 2021. 4. Fekik, A., Azar, A.T., Denoun, H., Kamal, N.A., Bahgaat, N.K., Gorripotu, T.S., Pilla, R., Serrano, F.E., Mittal, S., Rana, K.P.S. and Kumar, V., 2021. Improvement of fuel cell MPPT performance with a fuzzy logic controller. In *Renewable Energy Systems* (pp. 161- 181). Academic Press, 2021. 5. Singh, Shikha, et al. "Multi-switching synchronization of nonlinear hyperchaotic systems via backstepping control." *Backstepping Control of Nonlinear Dynamical Systems*. Academic Press, 2021. 425-447. 6. Singh, Shikha, and Ahmad Taher Azar. "Multi-switching combination synchronization of fractional order chaotic systems." *Joint European-US Workshop on Applications of Invariance in Computer Vision*. Springer, Cham, 2020. 7. Sundarapandian Vaidyanathan, Sambas Aceng, Zhang S., Ahmad Taher Azar, Shikha . " A plasma-torch chaotic oscillator, its analysis, backstepping control and circuit simulation." Backstepping Control of Nonlinear Dynamical Systems. (2019). 8. Shikha, et al. "Active Control for Multi-Switching Combination Synchronization of Non- Identical Chaotic Systems." *Advances in System Dynamics and Control*. IGI Global, 2018. 129-162. 9. Shikha, et al. "Multiswitching Synchronization of Commensurate Fractional Order Hyperchaotic Systems Via Active Control." *Mathematical Techniques of Fractional Order Systems*. 2018. 319-345. 10. Shikha, Ahmad Taher Azar, and Quanmin Zhu. "Multi-switching Master–Slave Synchronization of Non-identical Chaotic Systems." *Innovative Techniques and Applications of Modelling, Identification and Control*. Springer, Singapore, 2018. 321- 330. 11. Vaidyanathan, S., Azar, A. T., Sambas, A., Shikha., Alain, K. S. T., & Serrano, F. E. (2018). A novel hyperchaotic system with adaptive control, synchronization, and circuit simulation. In *Advances in System Dynamics and Control* (pp. 382-419). IGI Global.

Other Achievements

Internship Guidance

1. Guided three-month long internship (from 1/08/2020 to 5/11/2020) to Ms. Devika Khurana a student of M.Sc. Mathematics program, IIT Roorkee on the Topic "Fundamental Dynamical Properties of Chaos" under my supervision at the Department of Mathematics, Jesus and Mary College, University of Delhi, Chanakyapuri, New Delhi.

2. Guided three-month long internship (from 1/08/2020 to 5/11/2020) to Ms. Kanishka Goyal a student of M.Sc. Mathematics program, Banaras Hindu University on the Topic "Study of Dynamical Behavior of Chaotic and Hyperchaotic Systems" under my supervision at the Department of Mathematics, Jesus and Mary College, University of Delhi, Chanakyapuri, New Delhi.

Workshops/ FDP/ Paper Presentations

1. Participated in online TWO-WEEK REFRESHER COURSE IN "MATHEMATICS" organized by "Department of Mathematics, Ramanujan College" held on 31/08/2021 to 14/09/2021 and obtained grade A+.
2. Participated in online TWO-WEEK REFRESHER COURSE IN "MATHEMATICS" organized by "Department of Mathematics, Ramanujan College" held on 16/03/2021 to 30/03/2021.
3. Paper presentation entitled "Multi-switching Synchronization of Chaotic Systems via Sliding Mode Control" in The National Conference on Advances in Mathematical Analysis and Its Applications organized at PGDAV college during 8-10 November, 2019.
4. Paper presentation entitled "Combination-Combination Synchronization of Fractional Order Hyperchaotic Systems" in The Conference on Nonlinear Systems and Dynamics organized at Jawaharlal Nehru University during 11-14 October, 2018.
5. Delivered a talk entitled "*Dynamical Properties of a Hyperchaotic Nonlinear Dynamical System with No Equilibrium Point*" in "Dynamics Day Delhi-2016" during December 14th at Cluster Innovation Centre (CIC).
6. Paper presentation entitled "Synchronization between a Novel Integer-Order Hyperchaotic System and a Fractional –Order Hyperchaotic System using Tracking Control" in International Conference on Differential Geometry, Algebra and Analysis held in Jamia Millia Islamia, during November 15-17, 2016.
7. Paper presentation entitled "Generalized Increased and Reduced Order Synchronization between 5D and 6D Hyperchaotic Systems" in International Conference on The Occasion of Silver Jubilee of the Indian Society of Industrial and Applied Mathematics (ISIAM) (2016) held at Sharada University, Noida, India during 29-31 January, 2016.