CURRICULUM VITAE

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Curriculum Vitae

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Date of Birth **:** 10th August, 1957

Nationality **:** Indian

Marital Status **:** Married with two children

Correspondence Add. **:** 259, Ikram House, Jamia Nagar
New Delhi-110025, INDIA

Current Pursuits **:** Professor
Department of Mathematics
Jamia Millia Islamia
New Delhi-110025

Qualification:

1. Ph.D. (University of Delhi), 1995
   Title of Ph.D. Thesis: Chaos in Non-Linear Planar Oscillations
   of a Satellite in Elliptic Orbits.

2. M.Phil. (University of Delhi), 1983
   Title of M.Phil. Thesis: Linear and Non-Linear Stability of
   Dynamical Systems

3. Master of Science in Mathematics from University of Delhi.
   1981

4. B.Sc (Hons.) Mathematics, Ramjas College, University of
   Delhi, 1979

Teaching Experience **:** Total of 34 Years
(From September 1983 to 3rd Feb. 2013 at Department of Mathematics, Zakir Husain Delhi College, University of Delhi, Delhi)
(4 Feb. 2013 to Onwards at Department of Mathematics, Jamia Millia Islamia, New Delhi)

At U.G. Level : B. A./ B.Sc (H), B.Sc. General, B. A. Pass, Bachelor of Engg, B.Com(H), Chemistry (H), Psychology (H)(Mathematics paper only), Economics (H), Information Technology, B. E.(Civil Engg) at Department of Mathematics, University of Delhi and Department of Mathematics,Jamia Millia Islamia, New Delhi

At P.G. Level **:** M.A./ M.Sc. Mathematics, M.Tech (Mathematical Modeling and Simulation of Nanostructures) at University of Delhi and Department of Mathematics, Jamia Millia Islamia, New Delhi

At M.Tech Level **:** Teaching one Paper "Mathematical Modeling and Simulation of Nanostructues" to M.Tech Nanotechnology students at Centre for Nanoscience and Nanotechnology, JMI, since 2007 to till date. Also guided several research projects on Simulation and modelling of Single Wall Carbon Nano-tubes.

At Ph.D. Level **:** Guiding Ph.D student at Department of Mathematics, Delhi University and at Department of Mathematics, Jamia Millia Islamia, New Delhi. Also examined various Ph.D. theses

.

International Experience : Two Years (From 2000 to 2002)
Assistant Professor
College of Telecom and Information
Riyadh, Kingdom of Saudi Arabia

Research Experience : About 31 years,

Ph.D. Awarded:

1. **Topic:** Chaotic motion in Non-Linear Dynamical Systems
   Name of the student: Mohd. Shehzad, year 2002
2. **Topic:** Excitation of parameters in N0n-Linear Systems and chaos control
   Name of the student: Ilyas Miyan, year 2004
3. **Topic:** Non Linear dynamical systems and chaos synchronization
   Name of the student: Prem Pal Singh, year 2010
4. **Topic:** Chaos control in some problems of satellite
   Name of the student: Niti Goel, year 2012
5. **Topic:** Synchronization
   Name of the student: Priyam Vada
6. **Topic:** Computational and analytical studies of chaotic and controlled Non Linear dynamical systems
   Name of the student: Ram Pravesh
7. **Topic:** Topological studies in chaotic systems and control
   Name of the student: Praveen Kumar

8. **Topic:**Non linear Dynamics and chaos control

   Name of the student: Rimpi Paul

9. **Topic:** Controlling methods of synchronized chaotic systems

   Name of the student: Geeta Jain

10. **Topic:** Synchronization of Chaotic and Hyperchaotic Nonlinear Dynamical Systems

    Name : Muzaffar Ahmad Bhat

11. **Topic:** Chaos Synchronization and Chaotic Analysis of Autonomous Continuous Nonlinear Dynamical Systems

    Name : Shikha

12. **Topic:**

    Name : Sanjay Kumar

13. **Topic:** Chaos Synchronization and Dynamical Analysis of Nonlinear Dynamical Systems

    Name : Arti Tyagi

Ph.D Submitted:

14.Topic: Non Linear Dynamical systems and Chaos Synchronization

Name : Nitish

15.Topic: Multi-Switching Synchronization of chaotic and hyperchaotic dynamical systems

Name : Aysha

Ph.D. work in progress:

16.Topic: Non Linear Dynamical systems and |Chaos control

Name of the student: Vishal Dhawan

17.Topic: Non Linear Dynamical Systems and Chaos Control

Name : Neha Aggrawal

18.Topic: Simulation and Modelling of Single Wall Carbon Nano Tube

Name : Monika Tyagi

19.Topic: Applications of Dynamical Systems

Name : Pushali Trikha

20.Topic: Synchronization of Chaos in Non-linear Dynamical Systems

Name : Nasreen

21.Topic: Dynamical System and Chaos Theory

Name : Uzma Nigar

22.Topic: Chaos in Dynamical Systems

Name : Lone Seth Jahanzaib

23.Topic: Dynamical Systems

Name : Harindri Chaudhary

M.Phil. awarded and to be submitted:

1. **Topic:** Parametrically study of chaotically controlled Non Linear dynamical systems

   Name of the student: Sanjeev Singh, year 2010-04-22

2. **Topic:** Study of regular and chaotic motion in Non Linear dynamical systems.

   Name of the student: Surendra Kumar, year 2008

3. Topic: Control synchronization of choastic systems

   Name of the student: Pardeep Kumar, year 2012

4. **Topic :** Study of Various Types of Chaos Synchronization with Different Hyperchaotic Systems, year 2014

   Name of the Student:Ravi

Supervised M.Tech (Nanotechnology) Projects:

1. **Topic:** Modeling and Simulation of carbon nanotubes

   Name of the Student: Ibrar Noor

2. **Topic:** Modeling and Simulation of CNT based Transistor

   Name of the Student: Sajid Hussain

3. **Topic:** Simulation And Parametric Study of Carbon Nanotubes Based FETss

   Name of the Student: Mohattir Alam

4. **Topic:** Modeling and Simulation of Metal-CNT contacts and their I-V

Characterizations

Name of the Student: Suhail Khan

5. **Topic:** Nanoscale MOSFET Device Modeling Design and Simulation Using Non-Equilibrium Green Function

   Name of the Student: Mohammed Intekhab

6. **Topic:** Nanoscale Modeling Design and Simulation of Transistors

   Name of the Student: Mohammad Kashif Hasan

7. **Topic:** The study of Simulation and Modeling of Nanowire Biosensor

   Name of the Student: Gulshanaz Ali Qureshi

8. **Topic:** Nonlinear Force Vibrations of Carbon Nanotubes

   Name of the Student: Taufique Alam

9. **Topic:** Modeling and Simulation of Certain Nanosystems

   Name of the Student: Isteyaque Ahmad

10. **Topic:** Nanodynamic

    Name of the Student: Faraz Hashmi

11. **Topic:** Carbon Nanotubes and Molecular Dynamics

    Name of the Student: Sayeedur Rahman

12. **Topic:** Non Linear Oscillation of Single Wall Carbon Nanotubes under the Impulsive forces

    Name of the Student: Anam Khan

List of Publications:

1. Ayub Khan, Priyamvada Tripathi, Function Projective Synchronization of a New Hyper Chaotic System, International Journal of Scientific & Engineering Research, 4(12), 1001, 2013.
2. Ayub Khan, Geeta Jain, Hybrid Projective Synchronization And Chaos Control, Published in IRJES , 2013
3. Ayub Khan and Mohammad Shahzad, Synchronization of Circular Restricted Three Body Problem with Lorenz Hyper Chaotic System using a Robust Adaptive Sliding Mode Controller, **Complexity,** Wily Periodicals, 18(6), 2013, 58-64.
4. Khan, A. and Tripathi, P., Synchronization of a Restricted Three Body Problem under the Effect of Radiation Pressure, **International Mathematical Forum**, 8(3), 2013, 113 - 124.
5. Khan, A. and Tripathi, P., Synchronization, Anti-synchronization and Hybrid-synchronization of a Double Pendulum Under the Effect of External Forces, **International Journal Of Computational Engineering Research**, 3(1), 166- 179.
6. Ayub Khan and Rimpi Pal, Complete Synchronization, Anti-synchronization and Hybrid Synchronization of two Identical Parabolic Restricted Three Body Problem, **Asian Journal of Current Engineering and Maths 2:**2 March- April, 2013, 118 - 130.
7. Ayub Khan and Rimpi Pal, Synchronization of Two Identical Restricted Planar Isosceles Three-Body-Problem and a Study on Possible Chaos Control, Discontinuity, **Nonlinearity, and Complexity**, 2(2), 2013, 183–201.
8. Ayub Khan and Rimpi Pal, Generalized Robust Active Sliding Mode Synchronization of identical chaotic systems under periodic external disturbances, communicated to **Int. J. Of Robust and Nonlinear Control**, Wiley.

9. Ayub Khan and Praveen Kumar, Chaotic Phenomena and Non-autonomous Dynamical System, GJTAMS, 2013 3(1), 31-19.

10. Ayub Khan and Praveen Kumar, Chaotic Properties on the Time Varying Map and its Set Valued Extension, Accepted in **Advance in Pure Mathematics**, 3, 359-364, 2013.

11. Ayub Khan & Mohammad Shahzad: Synchronization of Mimas-Tethys system with driven damped pendulum using a robust adaptive sliding mode controller. **International Journal of Control Science and Engineering**, 3(1), 2013, 1-7.

12. Ayub Khan, Samina Husain, S. B. Qadri, Mohammad Shahzad, M. Husain: Dynamical Response of the Non-Linear Vibration of Single-Wall Carbon Nanotubes (SWCNTs). ***Journal of Computational and Theoretical Nanoscience***, Volume 9 (3), 360–370, 2012.

13. Ayub Khan & Mohammad Shahzad: Chaos Synchronization in a circular restricted three body problem under the effect of radiation. Published in the proceedings of ***4th International Interdisciplinary Chaos Symposium on Chaos and Complex Systems***, April 29 - May 02, 2012, Istanbul Kultur University, Antalya, Turkey.

14. Ayub Khan & Mohammad Shahzad: Computational study of synchronization & Anti-synchronization in Mimas–Tethys System. **i-manager's Journal on Mathematics**, Volume 1(2), 26-33, 2012.

15. Ayub khan and Ram Pravesh Prasad, Anti-Synchronization of Pan and Lorenz-Lu- Liu-Cai Chaotic Systems by Active Nonlinear Control**,** HYPERLINK "http://www.igi-global.com/journal/international-journal-artificial-life-research/1153" International Journal of **Artificial Life Research**, **3(2),** 2012, 15-25.

16. Ayub khan and Ram Pravesh Prasad, Hybrid Synchronization of Shimizu-Morioka System via Active control, **International Journal of Computer Information Systems**, 5(5), 2012, 39-48.

17. Ayub Khan & Mohammad Shahzad: Control of chaos in rotational motion of a satellite in elliptic orbit under the influence of third body torque. ***Journal of Applied Functional Analysis***, Volume-6 (1), 11-16, 2011.

18. Ayub Khan and Niti Goel, Chaotic Motion in Problem of Dumbell Satellite, **Int. J. Contemp. Math. Sciences,** 6(7) 2011, 299 – 307

19. Ayub Khan, Prem Pal Singh, Study of Chaos Synchronization, **Journal of International Mathematical Fourum**, Vol. 5, 11, 511-526, 2010.

20. Ayub Khan, Prem Pal Singh, Non-Linear Dynamical Systems and Chaos Synchronization (II), **International Journal of Artificial Life Research**, 1(2) USA, 2010.

21. Khan, A., Goel, N., Chaos Control in the Problem of a Satellite, **Applied Mathematical Sciences**, 4(25), 2010, 1233-1240.

Ayub Khan and Niti Goel, Non Resonant and Resonant Planar Oscillation of a Satellite**, International Journal of Advances in Theortical Applied**

22. Ayub Khan, Niti Goel, Samina Khan, M. Husain, Dynamical response of the Non-linear Vibration of Single Walled Carbon Nanotubes, **Int. Journal of Nano Particles**, 2, 2009, 216-225.

23. Ayub Khan, Z. A. Taqvi, Mohammad Shahzad : Chaos in nonlinear planar oscillation of inter-connected satellites system. ***Ganita Sandesh***, 23(1) , 2009, 1-18.

24. Ayub Khan & Mohammad Shahzad: Chaos in the restricted problem of three bodies using KBM method. ***Ganita Sandesh***, 23(2), 2009, 191-198.

25. Ayub Khan, Prem Pal Singh, Chaos Synchronization by a linear feedback control, **International Journal of Applied Mathematical Sciences** (Bulgaria), 4(16), 2009 761-775.

26. Ayub Khan, Prem Pal Singh, Non Linear Dynamical Systems and Chaos Synchronization, **International Journal of Bifurcation and Chaos in**

Applied Sciences and Engineering, USA, 18(5), 2008, 1531 - 1537.

27. Ayub Khan, Z. A. Taqvi, Mohammad Shahzad, T. P. Sarma, Resonant & non-resonant solutions using KBM technique. ***Ganita Sandesh***, 21(2), 2007, 141-156.

28. Ayub Khan & Mohammad Shahzad, Control of chaos in Hamiltonian system of Mimas-Tethys system. ***The Astronomical Journal***, 2008, 136 (5), 2201-2203.

29. Ayub Khan, Z. A. Taqvi, Mohammad Shahzad, Ilyas Miyan, **Chaotic oscillations of mimas-tethys system under solar radiation pressure**. ***Ganita Sandesh***, *22* (2), 2008, 117-132.

30. Ayub Khan and Niti Goel, Chaos control in non-linear planar oscillations of an elliptic satellite, **Bulletin Cal. Math. Soc.** 100, 631-638, 2008.

31. Ayub Khan and Niti Goel, Resonant and nonresonant solution in the problem of interconnected satellites under the effect of magnetic forces, **Global Journal**, 2008 (In press).

32. Khan, A., Goel, N., Controlling Chaos in an Artificial Earth Satellite**, Global Journal of Pure and Applied Mathematics**, ISSN 0973-1768, IV(3), 2008, 223-228.

34. Ayub Khan, L. M. Saha & Til Prasad, Lie Technique in the restricted three body problem, **Ganita Sandesh**, 19, 63-78, 2005.

35. Ayub Khan, L. M. Saha & Til Prasad, Hori's method to Non-linear coupled oscillators and applications to restricted three body problems, **Bulletin Astronomical Society of India**, 28, 147-152, 2000.

36. Ayub Khan, Renu Sharma & M. Saha, Chaotic motion of an ellipsoidal satellite, **The Astronomical Journal** (USA), 116, 2058-2066, 1998.

37. Ayub Khan, K. B. Bhatnagar & L. M. Saha, Non Linear Planar Oscillations of a satellite under the influences of Solar Radiation Pressure (I), **Bulletin Astronomical Society of India**, 22, 47-58 (1994).

38. Ayub Khan, K. B. Bhatnagar & L. M. Saha, Non Linear Planar Oscillations of a satellite under the influences of Solar Radiation Pressure (II), **Bulletin Astronomical Society of India**, 22, 275-290 (1994).

39. Ayub Khan and Praveen Kumar, Recurrence and Shadowing on Hyperspace and Fuzzified Dynamical Systems Accepted in "**Far east Journal of dynamical systems**" 2013.

40. Khan, A. and Tripathi, P., Synchronization Between a Fractional Order Chaotic System and an Integer Order Chaotic Systems, **Nonlinear Dynamics and Systems Theory**.

41. Khan, A., Goel, N., Non-resonant and Resonant Planar Oscillation of the Satellite in Elliptic Orbit, **Advances in Theoretical and Applied Mathematics**, 2009 (Accepted).

42. Khan, A. and Tripathi, P., Hybrid Projective Synchronization Between Different Fractional Order Chaotic Systems. (Communicated)

43. Ayub khan and Ram Pravesh Prasad, Projective Synchronization of different Hyper-chaotic Systems By Active Nonlinear Control, Accepted in Journal of Uncertain Systems(World Academic Union), 2013

44. Ayub khan and Ram Pravesh Prasad, Anti-Synchronization in Different New Chaotic Systems Via Active Nonlinear Control, Archive of Control Sciences, Vol. 23(LIX), 2013, No. 2 pp.131-143

45. Ayub khan and Ram Pravesh Prasad, Hybrid Synchronization of Hyperchaotic Cai Systems Via Sliding Mode Control, Accepted in Journal of Engineering Thermo Physics(Springer), 2013

46. Khan, Ayub, and Prempal Singh. "Chaos Synchronization in Lorenz System." *Applied Mathematics* 6, no. 11 (2015): 1864.

47. Kumar, Avshish, Mubashshir Husain, Ayub Khan, and Mushahid Husain. "Effect of parametric variation on the performance of single wall carbon

nanotube based field effect transistor." *Physica E: Low-dimensional Systems and Nanostructures* 64 (2014): 178-182.

48. Khan, Ayub, and Priyamvada Tripathi. "Synchronization between a fractional order chaotic system and an integer order chaotic system." *Nonlinear Dynamics and Systems Theory* 14, no. 4 (2013)

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51. Khan, Ayub, and Ram Pravesh Prasad. "Modified Projective Synchronization of New Hyper-chaotic Systems." *Journal of Information and Computing Science* 9, no. 1 (2014): 049-053.

52. Tripathi, Priyamvada, and Ayub Khan. "Hybrid projective synchronization between non-identical fractional order chaotic systems." *International Journal of Engineering and Innovative Technology (IJEIT)* 3 (2013): 41-49.

53. Khan, Ayub, and Priyamvada Tripathi. "Synchronization of a Restricted Three Body Problem under the Effect of Radiation Pressure." In *International Mathematical Forum*, vol. 8, no. 3, pp. 113-124. 2013.

54. Khan, Ayub, and Praveen Kumar. "Chaotic phenomena and nonautonomous dynamical system." *Global J. Theor. Appl. Math. Sci* 3 (2013): 31-39.

55. Ayub Khan, Shahzad, Mohammad, and Mohammad Raziuddin. "NUMERICAL STUDY OF ANTI-SYNCHRONIZATION OF A NATURAL SATELLITE (ENCELADUS)." (2014).

56. Khan, Ayub, and Ram Pravesh Prasad. "Anti-Synchronization of Pan and Lorenz-Lu-Liu-Cai Chaotic Systems by Active Nonlinear

Control." *International Journal of Artificial Life Research (IJALR)* 3, no. 2 (2012): 15-25.

57. Khan, Ayub, Net Ram Garg, and Geeta Jain. "Chaos synchronization using backstepping control method of two systems." *Journal of Mathematical and Computational Science* 6, no. 6 (2016): 1133-1144.

58. Husain, Mushahid, and Ayub Khan. "Nanotechnology and Mathematics “Study of Non-linear Dynamic Vibration in Single Walled Carbon Nanotubes (SWNTs)”." In *Mathematical Models, Methods and Applications*, pp. 137-141. Springer Singapore, 2015.

59. Khan, Ayub, Net Ram Garg, and Geeta Jain. "Backstepping Design and Fractional Derivative Equation of Chaotic System." *World Academy of Science, Engineering and Technology, International Journal of Mathematical, Computational, Physical, Electrical and Computer Engineering* 8, no. 6 (2014): 967-971.

60. KHAN, A., and N. GOEL. "NON-RESONANT AND RESONANT PLANAR OSCILLATION OF THE SATELLITE." *INTERNATIONAL JOURNAL OF APPLIED ENGINEERING RESEARCH* 10, no. 8 (2015): 21267-21272.

61. Khan, Ayub, Net Ram Garg, and Geeta Jain. "New fractional order hyperchaotic system and generalized projective synchronization." In *Computing for Sustainable Global Development (INDIACom), 2014 International Conference on*, pp. 481-485. IEEE, 2014.

62. Khan, Ayub, and Ram Pravesh Prasad. "Anti-synchronization in different new chaotic systems via active nonlinear control." *Archives of Control Sciences* 23, no. 2 (2013): 229-242.

63. KHAN, AYUB, and RIMPI PAL. "COMPLETE SYNCHRONIZATION, ANTI-SYNCHRONIZATION AND HYBRID SYNCHRONIZATION OF TWO IDENTICAL PARABOLIC RESTRICTED THREE BODY PROBLEM." *Asian Journal of Current Engineering and Maths* 2, no. 2 (2013): 118-126.

64. Khan, Ayub, and Mohammad Shahzad. "Chaos Synchronization in a circular restricted three body problem under the effect of radiation."

In *Chaos and Complex Systems*, pp. 59-68. Springer Berlin Heidelberg, 2013.

65. Khan, A. and Kumar S. (2016). T.S. fuzzy modeling and synchronization of chaos. Journal of uncertain systems, 10(4), 252-259.

66. Khan, A., Garg, N. R., & Jain, G. (2014). Backstepping Design and Fractional Derivative Equation of Chaotic System. *World Academy of Science, Engineering and Technology, International Journal of Mathematical, Computational, Physical, Electrical and Computer Engineering*, *8*(6), 967-971.

67. Khan, A., Garg, N. R., & Jain, G. (2016). Chaos synchronization using backstepping control method of two systems. *Journal of Mathematical and Computational Science*, *6*(6), 1133-1144.

68. Khan, A., Garg, N. R., & Jain, G. (2014, March). New fractional order hyperchaotic system and generalized projective synchronization. In *Computing for Sustainable Global Development (INDIACom), 2014 International Conference on* (pp. 481-485). IEEE.

69. Khan, A., Garg, N. R., & Jain, G. OPCL Coupling and Modified Projective Synchronization of Fractional order Differential Systems." International Journal of Engineering and Innovative Technology (IJEIT) Volume 5, Issue 5, November 2015 "

70. Khan, A., & Shahzad, M. (2014). Synchronization of Circular Restricted Three Body Problem with Liu Hyper Chaotic System using a Robust Adaptive Sliding Mode Controller. *i-Manager's Journal on Mathematics*, *3*(2), 22.

71. Ayub Khan and Muzaffar Ahmad Bhat., Multi-switching combination–combination synchronization of non-identical fractional-order chaotic systems, Mathematical Methods in Applied Sciences 40(15), 5654-5667,2017 (SCI Indexed, I.F.=1.002).

72. Ayub Khan and Muzaffar Ahmad Bhat., Hyper-chaotic analysis and adaptive multi-switching synchronization of a novel asymmetric non-linear dynamical system,International Journal of Dynamics and Control,5(4),1211-1221,2017. (SCOPUS)

73. Ayub Khan and Muzaffar Ahmad Bhat., Hybrid Projective Synchronization of fractional order chaotic systems with fractional order in the interval (1,2), Nonlinear Dynamics and system Theory,16 (4) (2016) pp.350-365. (SCOPUS)

74. Ayub Khan and Muzaffar Ahmad Bhat., Multi-switching combination–combination synchronization of non-identical fractional-order chaotic systems,(accepted) FILOMAT (SCI Indexed, I.F.=0.638)

75. Ayub Khan and Muzaffar Ahmad Bhat., Hyperchaotic Analysis And Adaptive Projective Synchronization of Non Linear Dynamical System, Computational and Mathematical Modelling(springer) 28(4), 517-530,2017.(SCOPUS Indexed).

76. Ayub Khan and Muzaffar Ahmad Bhat., Analysis and Projective synchronization using active control of New 4D Hyperchaotic System, Journal of Uncertain Systems, 11, 257-268, 2017(Scopus)

77. Ayub Khan and Muzaffar Ahmad Bhat., Multi-switching combination synchronization of non-identical fractional-order chaotic systems, Pramana(accepted) (SCI Indexed, I.F.=0.692).

78. Ayub Khan and Muzaffar Ahmad Bhat., Hybrid Projective Synchronization of incommensurate fractional order chaotic systems. JMI International Journal Of Mathematical Sciences.Vol. 6 pp 15-30

79. Ayub Khan and Muzaffar Ahmad Bhat., Generalized Projective Synchronization of New Hyperchaotic System with fractional order.

80. Ayub Khan and Muzaffar Ahmad Bhat. Projective Synchronization via feedback controller of fractional order chaotic system with fractional order greater than one.

81. Ayub Khan and Muzaffar Ahmad Bhat. Multiswitching combination synchronization of different fractional order nonlinear dynamical systems. International journal of modelling and simulation, 1-8,2018. Taylor and Frances(scopus)

82. Ayub khan and Arti Tyagi, Fractional order disturbance observer based adaptive sliding mode synchronization of commensurate fractional order Genesio-Tesi system , ***AEÜ - International Journal of Electronics and Communications (2017): 346-357 (Elsevier) (SCI) (I.F- 1.14).***

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84. Ayub khan and Arti Tyagi, Hybrid Projective synchronization between two identical new 4-D hyper-chaotic system via active control method, ***International Journal of Nonlinear Science (2017): 142-150 (World Academic Union) (Google scholar and Math sci net).***

85. Ayub khan and Arti Tyagi, Chaos Synchronization Of A Chaotic Tumor Growth And Decay Model, ***Indian Journal of Industrial and Applied Mathematics (2017): 46-60 (Google Scholar).***

86. Ayub khan and Arti Tyagi, Hybrid and Projective Synchronization Of Multi-Scale Cancer-Invasion Model, ***JMI International Journal of Mathematical Sciences (2016): 1-18.***

87. Ayub khan and Arti Tyagi, Adaptive sliding mode hybrid projective synchronization of fractional order Newton-Leipnik chaotic system with disturbance, ***International Journal of Dynamics and Control(Springer) (2018)(Scopus).***

88. Ayub khan and Arti Tyagi, Disturbance observer based adaptive sliding mode hybrid projective synchronization of identical fractional-order financial systems, ***Pramana (Springer) (2018) (SCI) (I.F- 0.52).***

89. Ayub khan and Arti Tyagi, OPTIMAL AND ADAPTIVE CONTROL OF A NEW HYPER-CHAOTIC SYSTEM ABOUT ITS UNSTABLE EQUILIBRIUM POINTS, ***Journal of uncertain system (Accepted) (World Academic Union) (Scopus).***

90. Khan, Ayub. "Hybrid function projective synchronization of chaotic systems via adaptive control." *International Journal of Dynamics and Control* (2016): 1-8.

91. Khan, A., and S. Shikha. "Mixed tracking and projective synchronization of 6D hyperchaotic system using active control." *Int J Nonlinear Sci* 22.1 (2016): 44-53.

92. Khan, Ayub. "Combination synchronization of Genesio time delay chaotic system via robust adaptive sliding mode control." *International Journal of Dynamics and Control*: 1-10.

93. Khan, Ayub. "Combination synchronization of time-delay chaotic system via robust adaptive sliding mode control." *Pramana* 88.6 (2017): 91.

94. Khan, Ayub. "Increased and Reduced Order Synchronizations between 5D and 6D Hyperchaotic Systems." *Indian Journal of Industrial and Applied Mathematics* 8.1 (2017): 118-131.

95. Khan, A. and Singh, S., 2017. Chaotic Analysis and Combination-Combination Synchronization of a Novel Hyperchaotic System without any Equilibria. *Chinese Journal of Physics*.

96. Ayub, K., Dynamical behavior and reduced-order combination synchronization of a novel chaotic system. *International Journal of Dynamics and Control*, pp.1-15.

97. Khan, Ayub, and Shikha Singh. "Generalization of combination-combination synchronization of n-dimensional time-delay chaotic system via robust adaptive sliding mode control." *Mathematical Methods in the Applied Sciences*.

98. Khan, Ayub, and Shikha Singh. "Robust Adaptive Sliding Mode Control Technique for Combination Synchronization of Non-Identical Time Delay Chaotic Systems." *International Journal of Modelling, Identification and Control*.

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100. Ayub Khan and Sanjay Kumar, Anti-synchronization of chaotic financial system by using fuzzy logic constant controller, Indian journal of industrial and applied mathematics, 7(2), 2016, Google scholar listed (ISIAM).

101. Ayub Khan and Sanjay Kumar, Study of chaos in satellite system, Pramana journal of physics, SCI listed (Springer), Published on January, 2018 issue, Impact Factor- 0.520.

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103. Ayub Khan and Sanjay Kumar, T-S Fuzzy observed based design and synchronization of chaotic and hyper-chaotic dynamical systems, International journal of dynamics and control, October, 2017, Scopus listed (Springer)

104. Ayub Khan and Sanjay Kumar, Measuring chaos and synchronization of chaotic satellite systems using sliding mode controlOptimal control, applications and methods, (Accepted), SCI listed (Wiley), Impact factor- 1.558.

105. Ayub Khan, Mridula Budhraja, Aysha Ibraheem, Multi-switching synchronization between T system and Liu system, International Journal of Dynamics and Control, 6 (2), 609-620 (2018) .

106. Ayub Khan, Mridula Budhraja, Aysha Ibraheem, Different types of synchronization between different fractional order chaotic systems, Nonlinear Dynamics and Systems Theory, 17 (3) , 279-290 ,(2017).

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114. Ayub Khan, Mridula Budhraja, Aysha Ibraheem, Multi-switching compound-compound synchronization of six chaotic systems, accepted, Pramana-Journal of Physics, (2018).

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116. Khan, Ayub, Dinesh Khattar, and Nitish Prajapati. "Dual combination combination multi switching synchronization of eight chaotic systems.", Chinese Journal of Physics. (Accepted)

117. Khan, Ayub, Dinesh Khattar, and Nitish Prajapati. "Multiswitching compound antisynchronization of four chaotic systems." *Pramana* 89.6 (2017): 90.

118. Khan, Ayub, Dinesh Khattar, and Nitish Prajapati. "Reduced order multi switching hybrid synchronization of chaotic systems." *Journal of Mathematical and Computational Science* 7.2 (2017): 414.

119. Khan, Ayub, Dinesh Khattar, and Nitish Prajapati. "Adaptive multi switching combination synchronization of chaotic systems with unknown parameters." *International Journal of Dynamics and Control* (2017): 1-9.

120. KHAN, AYUB, DINESH KHATTAR, and NITISH PRAJAPATI. "Multiswitching combination–combination synchronization of chaotic systems." *Pramana* 88, no. 3 (2017): 47.

121. Prajapati, Nitish, Ayub Khan, and Dinesh Khattar. "On multi switching compound synchronization of non identical chaotic systems." *Chinese Journal of Physics* 56.4 (2018): 1656-1666.

122. Khan, Ayub, Dinesh Khattar, and Nitish Prajapati. "Dual combination-combination multi switching anti synchronization of chaotic systems." *Journal of Mathematical and Computational Science* 7.5 (2017): 847-863.

123. Khan, A., Khattar, D., & Agrawal, N. (2016). SYNCHRONIZATION OF GENESIO AND LU CHAOTIC DYNAMICAL SYSTEMS VIA ACTIVE CONTROL. *International Journal of Applied Mathematics*, *29*(2), 161-174.

124. Khan, Ayub, Dinesh Khattar, and Neha Agrawal. "Synchronization between two non identical fractional order hyperchaotic systems." *Journal of Mathematical and Computational Science* 8.3 (2018): 318-330.

125. Khan, Ayub, Dinesh Khattar, and Neha Agrawal. "Hybrid projective synchronization between the fractional order systems." *Journal of Mathematical and Computational Science* 8.2 (2018): 253-269.

126. Khan, Ayub, Dinesh Khattar, and Neha Agrawal. "Synchronization of a new fractional order chaotic system." *International Journal of Dynamics and Control* (2017): 1-7.

Communicated:

127. Ayub Khan and Rimpi Pal, Adaptive Generalized Function Synchronization of non-identical, multi-time-delayed uncertain chaotic systems with application, communicated to **Nonlinear Analysis: Hybrid Systems**, Elsevier. (**communicated**)

128. Ayub Khan and Praveen Kumar, Chaoticity of Fuzzified Dynamical System, under revision in **Fuzzy Sets and Systems, 2013.**

129. Ayub Khan and Mohammad Shahzad: Synchronization of two identical Circular Restricted Three Body Problem using a Robust Adaptive Sliding Mode Controller. (In communication with **IMA Journal of Mathematical Control and Information**).

130. Ayub Khan and Rimpi Pal, Backstepping Projective Synchronization and Adaptive Function Projective Synchronization of identical chaotic systems with application, communicated to **Int. J. of Control, Taylor & Francis**.

131. Ayub Khan and Purnima Dixit, Irregular motion of an ellipsoidal satellite influenced by air resistance, to be communicated.

132. Ayub Khan and Dharmendra Kumar, Bounds of Chaotic Finance Model, to

be communicated.

133. Ayub Khan, K. Das, Synchronization of drive and response system, Journal of Applied Mechanics, to be communicated.

134. Ayub Khan, K. Das, Technique of Synchronization of Non-Linear Dynamical Systems, to be communicated.

135. Ayub Khan, Ram Pravesh Prasad, Chaos Synchronization and Hybrid Chaos Synchronization of identical Hyperchaotic Systems by Control Method, communicated

136. Ayub Khan, Avshish Kumar, Mushahid Husain, Effect of parametric variation on the performance of SWCNT based field effect transistor to be communicated.

137. Khan, Ayub. Shikha. "Synchronization Between a Noval Integer-Order Hyperchaotic System and a Fractional-Order Hyperchaotic System Using Tracking Control". (Communicated)

138. Ayub Khan and Sanjay Kumar, T-S fuzzy modeling and predictive control and synchronization of chaotic satellite system, Journal of nonlinear dynamics and its application, (Revised).

139. Ayub Khan and Sanjay Kumar, T-S Fuzzy model based design and adaptive synchronization of chaotic systems, Thai journal of mathematics (communicated for publication).

140. Ayub Khan and Sanjay Kumar, Observer based design and synchronization of time-delay chaotic systems using T-S fuzzy, Archive of control sciences (communicated for publication).

141. Ayub Khan and Sanjay Kumar, Measure of chaos and synchronization of chaotic satellite system using sliding mode control, Optimal control and applications and methods (communicated for publication)

142.Ayub Khan and Sanjay Kumar, Measure of chaos and synchronization of chaotic satellite system via adaptive control, Celestial Mechanics and Dynamical Astronomy (communicated for publication)

143. Ayub khan and Arti Tyagi, Optimal and Adaptive control Of a Novel Asymmetric Chaotic System About Its Unstable Equilibrium Points, Archives of Control Sciences(De Gruyter Open)

144. Ayub khan and Neha Aggrawal, Synchronization between fractional order systems. (communicated)

145. Ayub khan and Nitish Prajapati. "Multi-Switching Compound Synchronization of Four Non-Identical Chaotic Systems". (Communicated).

Paper Presented In Seminar/Conferences:

146. Ayub Khan and Prem Pal, Adaptive feedback synchronization, presented and to be published in the proceeding of "International conference on operator theory and related areas", 9^{th} to 12^{th} January 2008, Department of Mathematics.

147. Ayub Khan and Prem Pal, Impulsive and switching chaos synchronization, presented and to be published in the proceeding of "18th Annual conference of the Jammu Mathematical society", 29^{th} Feb and 22^{nd} March 2008.

148.Ayub Khan, Z. A. Taqvi and Mohd. Shazad, Chaotic behaviour of the interconnected under the combined influences of the solar radiation pressure together with the earth shadow effect and the some periodic force of general nature presented in the XXV^{th} meeting of the Astronomical society of India, Feb 7^{th} to 9^{th}, 2007.

149. Ayub Khan and L. M. Saha, Chaotic motion of a satellite in elliptic Orbit, presented to the International Symposium on Mathematical Physics with special session on Bose's work at Calcutta Mathematical Society, January 1^{st} -7^{th}, 1995.

150.Ayub Khan, S. K. Kaushik, Blocks on transfinite bases, presented to the conference of Indian Mathematical Society (IMS) held in Pune, 1986, India.

151.Ayub Khan, Mohammad Shehzad, Control of Chaos in Rotational Motion of Satellite in an Elliptic Orbit under the influence of third body torque, 3^{rd} International Interdisciplinary Chaos Symposium on '**Chaos and Complex Systems**.

152. Control of chaos in rotational motion of a satellite in an elliptic orbit, Ayub Khan, Mohammad Shehzad, Satellite conference of International congress of Mathematicians 2010 (ICM 2010)

153. Study of Non-Linear Dynamic Vibrations in Single Wall carbon Nanotubes (SWCNTs) by Mushahid Husain, Ayub Khan 11th Biennial Conference of the Indian Society of Industrial and Applied Mathematics, 15-16th December, 2012.

154. Non Linear Forced Vibrations of Ellipsoidal Fullerene Ayub Khan, Avshish Kumar, Mushahid Husain International Workshop on the Physics of Semiconductor Devices (IWPSD), December 10-13, 2013.

155. Paper presentation entitled ”Chaos Synchronization Of A Chaotic Tumor Growth And Decay Model” 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.

156. Paper presentation entitled "Synchronization between a Noval Integer-Order Hyperchaotic System and a Fractional–Order Hyperchaotic System using Tracking Control" in International Conference on Differential Geometry, Algebra and Analysis during November 15-17, 2016. 152. 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.

157. Paper presentation entitled ”Hybrid and Projective Synchronization Of MultiScale Cancer-Invasion Model” in International Conference on Differential Geometry, Algebra and Analysis during November 15-17, 2016.

158. Presented a paper entitled “Anti-Synchronization of Chaotic Financial System by Using Fuzzy Logic Constant Controller ” on International Conference on the occasion of Silver Jubilee of Indian Society of Industrial and Applied Mathematics (ISIAM), during January 29-31, 2016.

159. Presented a paper entitled “T-S Fuzzy Observed Based Design and Synchronization of Time-Delay Chaotic Systems” on International Conference on Differential Geometry, Algebra, Analysis (ICDGAA-16), Department of Mathematics, Jamia Millia Islamia during November 15-17, 2016.

160. Paper presentation entitled "Projective Synchronization via Feedback Controller of Fractional Order Chaotic System with Fractional Order Greater Than One" 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.

161. Paper presentation entitled ”Hyperchaotic Analysis and Adaptive Multi-Switching Synchronization of a Novel Asymmetric Nonlinear Dynamical System” in International Conference on Differential Geometry, Algebra and Analysis during November 15-17, 2016.

162. Paper presentation entitled ”Multi-Switching Combination Combination Anti-Synchronization of Non-Identical Chaotic Systems” in International Conference on Mathematics and Applications, Ramjas College, Delhi, during 26-28 April, 2017.

163. Paper presentation entitled ”Dual Combination Combination Multi-Switching Anti-Synchronization of Chaotic Systems” in 10th Chaotic Modelling and Simulation International Conference, Barcelona, Spain, 30th May-2nd, June, 2017.

Books:

Calculus and Geometry for Physical and Applied Physical Sciences

Ayub Khan, M. Arif, Urvashi

Book Age Pubications, 2007

Invited Talks Delivered / Participation in Seminars and symposium:

1. Indian Mathematical Society (Pune, Bombay, Delhi, and Aligarh)
2. International Conference on Celestial Mechanics (1983).
3. I.A.U (Colloqum on Chaos and Instability), Delhi (1990).
4. Participated in a three week professional development program entitled “Numerical Analysis and Differential Equation” by Centre for Professional Development and higher Education, University of Delhi, from April 8^{th} to April 30^{th} 1992.
5. Participated in a three week professional development program entitled “Differential equations” by Centre for Professional Development and higher Education, University of Delhi, from March 27^{th} to April 15^{th} 1995.

6. Visited Inter University Centre for Astronomy and Astrophysics IUCCA, Pune, during 24th December 1997 to 11th January 1998.
7. Invited for a presentation at the symposium on current trends in bio Mathematics, held by Department of Mathematics, IIT Roorkee, 14th March 2005.
8. Astronomical Society of India (XXVth Meeting) Hyderabad February 7th – 9th , 2007.

9. Delivered lecture on "Chaos" in refresher course conducted by Deptt of Economics, Jamia Millia Islamia.
10. Delivered talk on Mathematical modelling of Carbon Nanotubes in a national symposium on Nanoscience and Technology", 21st – 22nd Feb, 2009.
11. Attended an International Conference on " Recent Trends in Nano Science and Nanotechnology" held at King Abdullah Aziz University, Jeddah, KSA
12. Participated in a National Conference on " Recent Drifts, Brakes in Applied Sciences and its Technology for Innovation Management" organized by Krishna Institute of Engg. & Tech., Ghaziabad from 7th -9th August, 2009.
13. Attended and delivered a talk on Simulation and Modeling of Carbon Nanotubes in a National Seminar on Current Trends in Physics, 24th Oct., 2009, Ch. Devi Lal University, Sirsa
14. Delivered a talk in an "International workshop on Nanomaterials", Dr. Bhim Rao Ambedkar University, Agra, 23rd December 2009.
15. Attended and chaired a session in an International Workshop on the Physics of Semiconductor Devices, December 15-19, 2009.
16. Attended a "National Conference on Progress of Photovoltaic" Sharda University, 6th March, 2010.
17. Attend the 3rd International Interdisciplinary Chaos Symposium on "Chaos and Complex Systems", CCS 2010, 21 24 May, 2010 at Istanbul Kultur University, Istanbul, Turkey and presented a paper on control of Chaos in Rotational Motion of a Satellite in an Elliptic orbit under the Influence of Third body Torque".
18. Attended the "3rd International Interdisciplinary chaos symposium on CHAOS and COMPLEX SYSTEMS" Istanbul-Turkey, 21-24 May, 2010.
19. Presented a paper on Non linear Oscillations in Single Wall Carbon

Nanotubes, in Satellite Conference of International Congress of Mathematicians 2010 (ICM 2010), from 15-17 August, 2010, Sharda University

20. Chaired a session in Satellite Conference of International Congress of Mathematicians 2010 (ICM 2010), from 15-17 August, 2010, Sharda University

21. Chaired three session in " 3rd International Interdisciplinary chaos symposium on CHAOS and COMPLEX SYSTEMS (CCS2010)" Session A (Onder Oztunali Conference Hall), 14:00-15:00, May 23, 2010. Session A (Onder Oztunali Conference Hall), 15:10-16:10, May 23, 2010. Session A (Onder Oztunali Conference Hall), 16:30-17:30, May 23, 2010.

22. Presented a paper on "Chaos Synchronization in a circular restricted three body problem under the effect of radiation", 4th International interdisciplinary "Chaos Symposium on Choas and Complex System", from April 29 –May 02, 2012, Wow Topkapi Palace Hotel, Kundu-Antalya, Turkey

23. Chaired two sessions of Invited talks on April 30th and May 01, in 4th International interdisciplinary "Chaos Symposium on Choas and Complex System", from April 29 –May 02, 2012, Wow Topkapi Palace Hotel, Kundu-Antalya, Turkey

24. Visited Institute of Ion Beam and Vacuum Technologies e.V. Fritz-Muller-Strasse 137, 73730 Esslingen, Germany from 03rd May to 07th May, 2012.

25. Delivered a lecture on " Non Linear Dynamical Variations in SWNTs" in the Interaction Programme, Centre for Nanoscience and nanotechnology, JMI,2013.

26. Delivered a Plenary Talk on "Aging Process in the Carbon Nanotube" and also chaired a Technical session at National Conference on Nanomaterials and Devices (NANOCAD-2013), organized by Department of Physics, NIT Srinagar, Kashmir.

27. Attended and chaired a session in an International Workshop on the

Physics of Semiconductor Devices, December 10-13, 2013.

28. Delivered a Plenary Talk on “Recent Developments in Mathematics” organized by Department of Mathematics, Kalindi College, Delhi University.

29. Delivered a Plenary Talk on “Chaos Control and Synchronization” in the "National Conference on Applied Mathematical Sciences" organized by Department of Mathematics, Gujarat University Ahmedabad.

30. Delivered a memorial lecture on " Mathematical Modelling and Differential Equations" on National Mathematics Day organized by MANAV RACHNA INTERNATIONAL INSTITUTE OF RESEARCH AND STUDIES (DEEMED TO BE UNIVERSITY), FARIDABAD

31. Delivered a talk entitled “chaos control and synchronization” at the National Conference on Applied Mathematical Sciences 2018, jointly by the Department of Mathematics ,Gujarat University and Department of Applied Sciences and Humanities ,Parul University, Vadodara held on April 14-15,2018.

32. Delivered a talk entitled “Non-linear Dynamical Systems” at the seminar conducted by Krishna Engineering College, Mohan Nagar, Ghaziabad held on July 6,2018.

Membership of Learned Societies:

1. Indian Mathematical Society (Life Member)
2. Indian Science Congress & Calcutta Mathematical Society
3. Astronomical Society of India (Life Member)

Administrative Experience:

Member of advisory committee of M.Tech Nanotechnology programme, Centre for Nanoscience and Nanotechnology, JMI

Member of Central Admission Co-ordination and Monitoring Committee (CACMC), Jamia Millia Islamia

Member of Board of management, Centre for Interdisciplinary Research in Basic Sciences (CIRBSc), JMI, nominated by the Vice Chancellor for the term of three years (From 2013 - 2016)

Incharge, Post Graduate Admissions, Department of Mathematics, JMI for the year 2013

Students Union Advisor, Zakir Husain College, Delhi University

Chief Proctor, Zakir Husain College, Delhi University

Deputy Superintendent of Examination, Zakir Husain College, Delhi University

Convenor of NSS, Zakir Husain College, Delhi University

Convenor Time Table Committee, Zakir Husain College, Delhi University Member of various Administrative Bodies, Zakir Husain College, Delhi University

Course convenor, in a three week University Grants Commission sponsored refresher course entitled "Mathematical Sciences" organized by centre for professional development and higher education, University of Delhi, from 27th September to 18th October 2006.

Course convenor in a four week University Grants Commission sponsored orientation course organized by centre for professional development and higher education, University of Delhi, from 3rd May to 30th May 2007.

Course convenor in a three week University grants Commission sponsored refresher course entitled "Mathematics" organized by centre for professional development and higher education, University of Delhi, from 14th December to 5th January 2008.

Member of academic council M.J.P University Bareilley.

Representative of Meta University from Jamia in the coordination committee constituted by UGC.

Expert member in UGC major research project.

Expert member of faculty committee of Sharda University.

Member of B.O.S of following universities: Jamia millia Islamia, Al Falah university, Maulana Azad Urdu University ,Hyderabad.

Vice Chancellor nominee to different selection committees of Jamia millia university.

Deputy Controller of Examinations, Jamia Millia Islamia

Subjects Taught:

1) **Undergraduate Students:**
   Analysis, Algebra, Calculus, Mechanics, Differential Calculus, Co-Ordinate Geometry, Numerical Analysis, Vector Analysis, Vector Algebra, Linear transformations, Differential equations, vector calculus, Engineering Mathematics-I, Engineering Mathematics-II(B. E.).

2) **Post Graduate Students:**
   Mechanics, Fluid Dynamics, Differential Equations, Thermodynamics, Mathematical Modeling and Simulation of Nanostructures.

Awards:

1) Awarded University Grants Commission Junior Research Fellowship entitled" Quasi Periodic Orbits in restricted problems of three bodies" February 1983 to September 1983.

Refree Work:

Refereed papers for the following Journals:

1. Pramana- Journal of Physics

2. International Journal of Dynamics and Control

3. Complexity