

Curriculum Vitae

Surendra Kumar

Associate Professor
Department of Mathematics
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Education:

- **Ph.D. in Mathematics** February, 2013
Thesis Title:
Controllability of Semilinear Control Systems
Advisor: Prof. N. Sukavanam
IIT Roorkee
 - **M.Sc. in Mathematics** July, 2007
Chaudhary Charan Singh University, Campus, Meerut
 - **B. Sc.** July, 2005
Nanakchand Anglo Sanskrit (NAS) College
Chaudhary Charan Singh University, Campus, Meerut
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Research Interests:

Control Theory, Nonlinear Functional Analysis, Analysis of Partial Differential Equations

Publications:

2026:

- (1) A. Sharma, H.P. Singh and S. Kumar, Numerical solutions, convergence and global stability of delayed differential system with delay in the state variable of the Caputo derivative. *Nonlinear Dyn* **114**, 928 (2026). <https://doi.org/10.1007/s11071-026-12770-8>
- (2) S. Kumar, Approximate controllability of non-autonomous differential systems having instantaneous and non-instantaneous impulses, *Math. Methods Appl. Sci.* **49** (2026), no. 2, 659–667; MR5003382.
- (3) P. Sharma and S. Kumar, Approximation of solution to differential systems driven by Rosenblatt process containing noninstantaneous impulses, *Asian-Eur. J. Math.* **19** (2026), no. 3, Paper No. 2550075, 31 pp.; MR5041448
- (4) S. Kumar, H. P. Singh and A. Sharma, Analysis of the Haar wavelet collocation method for the multi-delay fractional differential equations with delays on non-uniform mesh, *Int. J. Appl. Comput. Math.* **12** (2026), no. 3, Paper No. 44, 44

pp.; MR5067723.

2025:

- (5) P. Sharma and S. Kumar, Approximation of solution to differential systems driven by Rosenblatt process containing non-instantaneous impulses, *Asian-Eur. J. Math.*, (2025) 2550075 (31 pages).
- (6) S. Kumar and P. Sharma, Approximate solutions for fractional stochastic integro-differential equation with short memory driven by non-instantaneous impulses, *Fract. Calc. Appl. Anal.* **28** (2025), no. 4, 1968–1996; MR4944912.
- (7) A. Upadhyay and S. Kumar, Exploring mild solution and Ulam–Hyers stability for non-autonomous fractional stochastic differential systems with non-instantaneous impulses, *J. Math. Phys.* **66** (2025), no. 5, Paper No. 052706, 20 pp.; MR4912720.
- (8) S. Kumar and A. Upadhyay, The solvability and Ulam–Hyers stability of fractional non-autonomous differential equations governed by mixed Brownian motion, *Iran. J. Sci.* **49** (2025), no. 5, 1343–1356; MR4963642.
- (9) S. Kumar and A. Upadhyay, The solvability and sensitivity of nonautonomous fractional differential inclusions steered by mixed Brownian motion, *Math. Methods Appl. Sci.* **48** (2025), no. 6, 6749–6763; MR4879267.
- (10) P. Sharma, S. Kumar and K. S. Nisar, Existence and convergence of approximate solutions for nonlinear measure driven differential systems, *Asian-Eur. J. Math.* **18** (2025), no. 8, Paper No. 2550020, 15 pp.; MR4934085.

2024:

- (11) S. M. Abdal and S. Kumar, Existence of integro-differential neutral measure driven system using monotone iterative technique and measure of noncompactness, *Differ. Equ. Dyn. Syst.* **32** (2024), no. 4, 1097–1109; MR4808269.
- (12) A. Sharma, S. Kumar and H. P. Singh, Numerical solutions of fractional differential equation with multiple delays via block boundary value method, *Int. J. Dyn. Control* **12** (2024), no. 3, 924–944; MR4709177.
- (13) S. Kumar, Approximate controllability of time-varying measure differential problem of second order with state-dependent delay and noninstantaneous impulses, *Math. Methods Appl. Sci.* **47** (2024), no. 1, 190–205; MR4685586.

2023:

- (14) S. Yadav and S. Kumar, Approximate controllability for impulsive stochastic delayed differential inclusions, *Rend. Circ. Mat. Palermo (2)* **72** (2023), no. 7, 3733–3748;

MR4645217.

- (15) S. Kumar and S. Yadav, Approximate controllability of stochastic delay differential systems driven by Poisson jumps with instantaneous and noninstantaneous impulses, *Asian J. Control* **25** (2023), no. 5, 4039–4057; MR4645925.
- (16) S. Kumar and P. Sharma, On the Faedo-Galerkin method for non-autonomous nonlinear differential systems, *Results Math.* **78** (2023), no. 3, Paper No. 107, 16 pp.; MR4568219.
- (17) S. Kumar and S. M. Abdal, Approximate controllability of nonautonomous second-order nonlocal measure driven systems with state-dependent delay, *Internat. J. Control* **96** (2023), no. 4, 1013–1024; MR4568626.
- (18) S. Kumar, On approximate controllability of non-autonomous measure driven systems with non-instantaneous impulse, *Appl. Math. Comput.* **441** (2023), Paper No. 127695, 13 pp.; MR4512409.
- (19) A. Upadhyay and S. Kumar, The exponential nature and solvability of stochastic multi-term fractional differential inclusions with Clarke's subdifferential, *Chaos Solitons Fractals* **168** (2023), Paper No. 113202, 7 pp.; MR4544051.

2022:

- (20) S. Kumar and S. Yadav, Approximate controllability for a new class of stochastic functional differential inclusions with infinite delay, *Random Oper. Stoch. Equ.* **30** (2022), no. 3, 221–239; MR4499177.
- (21) S. Kumar and P. Sharma, Faedo-Galerkin method for impulsive second-order stochastic integro-differential systems, *Chaos Solitons Fractals* **158** (2022), Paper No. 111946, 16 pp.; MR4396522.
- (22) S. Yadav and S. Kumar, Approximate controllability of infinite-delayed second-order stochastic differential inclusions involving non-instantaneous impulses, *Appl. Appl. Math.* **2022**, Special issue 10, Art. 1, 1–16; MR4515529.
- (23) A. Upadhyay and S. Kumar, Existence of solutions for non-autonomous second-order stochastic inclusions with Clarke's subdifferential and non instantaneous impulses, *Filomat* **36** (2022), no. 4, 1215–1230; MR4424076.
- (24) S. Kumar and S. M. Abdal, Approximate controllability for a class of instantaneous and non-instantaneous impulsive semilinear systems, *J. Dyn. Control Syst.* **28** (2022), no. 4, 725–737; MR4480154.

2021:

- (25) S. Kumar and S. Yadav, Infinite-delayed stochastic impulsive differential systems with Poisson jumps, *Indian J. Pure Appl. Math.* **52** (2021), no. 2, 344–362; MR4295271.
- (26) S. Kumar and S. M. Abdal, Approximate controllability of non-instantaneous impulsive semilinear measure driven control system with infinite delay via fundamental solution, *IMA J. Math. Control Inform.* **38** (2021), no. 2, 552–575; MR4267994.
- (27) S. Kumar, A. Sharma and H. P. Singh, Convergence and global stability analysis of fractional delay block boundary value methods for fractional differential equations with delay, *Chaos Solitons Fractals* **144** (2021), Paper No. 110648, 12 pp.; MR4210921.
- (28) S. Kumar and A. Upadhyay, Optimal control problem for fractional stochastic delayed systems with noninstantaneous impulses, *IMA J. Math. Control Inform.* **38** (2021), no. 3, 855–880; MR4305728.

2020:

- (29) S. Kumar and S. M. Abdal, Approximate controllability of non-instantaneous impulsive semilinear measure driven control system with infinite delay via fundamental solution, *IMA J. Math. Control Inform.* **38** (2021), no. 2, 552–575; MR4267994.
- (30) S. Kumar and S. M. Abdal, Approximate controllability for a class of instantaneous and non-instantaneous impulsive semilinear systems, *J. Dyn. Control Syst.* **28** (2022), no. 4, 725–737; MR4480154.
- (31) S. Kumar and R. P. Agarwal, Existence of solution for non-autonomous semilinear measure driven equations, *Differ. Equ. Appl.* **12** (2020), no. 3, 313–322; MR4155961.

2019:

- (32) S. Kumar and S. Rastogi, The solvability and controllability of semilinear coupled wave equation, *Int. J. Appl. Comput. Math.* **5** (2019), no. 2, Paper No. 30, 12 pp.; MR3941961.

2018:

- (33) S. Kumar, Approximate controllability of second-order impulsive stochastic differential system with nonlocal conditions, *Nonlinear Stud.* **25** (2018), no. 2, 301–313; MR3820758.

2017:

- (34) S. Kumar, The solvability and fractional optimal control for semilinear stochastic systems, *Cubo* **19** (2017), no. 3, 1–14; MR3824410.

- (35) S. Kumar, Mild solution and fractional optimal control of semilinear system with fixed delay, *J. Optim. Theory Appl.* **174** (2017), no. 1, 108–121; MR3673707.

2016:

- (36) S. Kumar, Approximate controllability of nonlocal impulsive fractional order semilinear time varying delay systems, *Nonlinear Dyn. Syst. Theory* **16** (2016), no. 4, 420–430; MR3676143.

2015:

- (37) S. Kumar and N. Sukavanam, Controllability of semilinear systems with fixed delay in control, *Opuscula Math.* **35** (2015), no. 1, 71–83; MR3282965.

2014:

- (38) S. Kumar and N. Sukavanam, Approximate controllability of retarded semilinear systems in Hilbert space, *Nonlinear Stud.* **21** (2014), no. 3, 475–484; MR3241493.
- (39) S. Kumar and N. Sukavanam, Controllability of second-order systems with nonlocal conditions in Banach spaces, *Numer. Funct. Anal. Optim.* **35** (2014), no. 4, 423–431; MR3177063.

2013:

- (40) S. Kumar and N. Sukavanam, Controllability of fractional order system with nonlinear term having integral contractor, *Fract. Calc. Appl. Anal.* **16** (2013), no. 4, 791–801; MR3124336.
- (41) S. Kumar and N. Sukavanam, On the approximate controllability of fractional order control systems with delay, *Nonlinear Dyn. Syst. Theory* **13** (2013), no. 1, 69–78; MR3076326.
- (42) S. Kumar and N. Sukavanam, Approximate controllability of fractional order semilinear delayed control systems, *Nonlinear Stud.* **20** (2013), no. 1, 73–83; MR3058401.

2012:

- (43) S. Kumar and N. Sukavanam, Approximate controllability of fractional order semilinear systems with bounded delay, *J. Differential Equations* **252** (2012), no. 11, 6163–6174; MR2911425.
- (44) S. Kumar and N. Sukavanam, Approximate controllability of fractional order neutral control systems with delay, *Int. J. Nonlinear Sci.* **13** (2012), no. 4, 454–462;

MR2948811.

2011:

- (45) N. Sukavanam and S. Kumar, Approximate controllability of fractional order semi-linear delay systems, *J. Optim. Theory Appl.* **151** (2011), no. 2, 373–384; MR2852407.

Scholarships and Awards:

- **UGC-CSIR Junior Research Fellowship**
August, 2008 -August, 2012.
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Teaching Experience:

- Assistant Professor, Department of Mathematics, University of Delhi.
February, 2014 - May, 2025.
 - Associate Professor, Department of Mathematics, University of Delhi.
May, 2025 - till date.
-

Courses Taught:

- Post-Graduate Level: Measure and integration, Topology, Functional Analysis, Complex Analysis, Matrix Analysis, Theory of Unbounded Operators, Stochastic Calculus for Finance.
-

Students Guided:

- **M.Phil:**

- (1) Paras Sharma (2018); Title of the Dissertation “Faedo–Galerkin Approximation for Nonlinear Evolution Equations in Hilbert Spaces.”
- (2) Farheen Ahmed (2016); Title of the Dissertation: “Approximations of Solutions to Semilinear Differential Systems.”
- (3) Monu Kumar (2014); Title of Dissertation “Approximate Controllability of Semilinear Systems with Delay.”

- **Ph.D.**

- (1) Anjali Upadhyay (2025); Title of the Thesis: “Existence of Mild Solutions and Stability Analysis of Stochastic Differential Systems.”
- (2) Abhishek Sharma (2025); Title of the Thesis: “Numerical Solutions and Convergence Analysis of Fractional Order Differential Equations with Bounded Delay.”
- (3) Shobha Yadav (2023); Title of the Thesis: “Approximate Controllability and Optimal Control for Stochastic Differential Systems with Infinite Delay.”
- (4) Syed Mohammad Abdal (2022), Title of the Thesis: “Approximate Controllability of Semilinear Control Systems with Delay and Impulses.”
- (5) Paras Sharma, under progress
- (6) Bikram Podder, under progress
- (7) Kanchan, under progress
- (8) Kanchan Kunwar Chauhan, under progress
- (9) Vaibhav Kanain, under progress

Updated on September 3, 2026.