Faculty Profile of Dr. S Saravanan

Dr. S Saravanan
Professor and Head
Department of Mathematics

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Phone No:0422-2428411

Mobile No:-

Research Area

- Differential Equations
- Mathematical Modelling
- Fluid Dynamics

Education & Career

Education

Ph. D. :

Subject : Mathematics
Institution : Bharathiar University
Year of Award : 2002

M.Phil. :

Subject : Mathematics
Institution : Bharathiar University
Year of Award : 1998

M. Sc. :

Subject : Mathematics
Institution : Sri Ramakrishna Mission Vidyalaya College of Arts and Science
Affiliated to : Bharathiar University
Year of Award : 1996

B. Sc. :

Subject : Mathematics
Institution : Sri Ramakrishna Mission Vidyalaya Arts College (Autonomous)
Affiliated to : Bharathiar University
Year of Award : 1994

Career

At Bharathiar University (Reverse Order)

Professor : 2015 onwards
Reader / Associate Professor : 2009 - 2015
Lecturer : 2001 - 2002, 2005 - 2009

Honors / Awards

Honor / Award, Awarding agency, Year

- Fellow; National Academy of Sciences, India; 2022

- BOYSCAST Fellowship (to work in Germany); DST, India; 2010
- Post-Doctoral Fellowship (to work in Japan); JSPS, Japan; 2004
- The President of India Award for Young Scientist; ISTAM, India; 2000
- Junior & Senior Research Fellowships (OC category of NET); CSIR, India; 1996.
- National Merit Scholarship; Govt. of India; 1989

Membership

Membership in Professional Bodies

Organization	**Type of Membership**	**Period**
Indian Society for Industrial and Applied Mathematics	Life Member	2001 onwards
Indian Society for Technical Education	Life Member	2002 onwards
Indian Society for Theoretical and Applied Mechanics	Life Member	2009 onwards

Membership in Academic Bodies

Organization	**Type of Membership**	**Period**

State Integrated Board of Studies in Mathematics Member
2019 onwards

PG Board of Studies in Mathematics Member
3 yrs
of few Universities & autonomous colleges
of other Universities

UG Board of Studies in Applied Sciences Member
2018-2021

Visits

Foreign Visits/Exposure

Sl No.	Countries Visits	Year	Purpose of Visit
1)	Beijing, China	2015	To present a paper in ICIAM 2015
2)	Seoul, South Korea	2014	To present a paper in ICM 2014
3)	Marrakech, Morocco	2012	To organize a minisymposium at CNSDD 2012
4)	Vancouver, Canada	2011	To present a paper at ICIAM 2011
5)	Adelaide, Australia	2008	To present a paper at ICTAM 2008

Collaborators

Others

Projects

Funded Projects

- Ongoing
- Completed (3)

1**. Title of the project** **:** Single and multicomponent convection with hyperbolic diffusion

Responsibility **:** Principal Investigator
Funding Agency **:** Tamil Nadu State Council for Higher Education
Amount / Duration : Rs. 14 Lakhs / 2021 - 2024

2. Title of the project : Transition to turbulence in passive cooling systems

Responsibility **:** Principal Investigator
Funding Agency **:** Science and Engineering Research Board
Amount / Duration : Rs. 21.28 Lakhs / 2023 - 2026

1. Title of the project : Stability and convection in rapidly rotating fluid systems

Responsibility **:** Principal Investigator
Funding Agency **:** Science and Engineering Research Council, DST
Amount / Duration : Rs. 2.46 Lakhs / 2008 - 2011

2. Title of the project : Mathematical modelling of electronic equipment cooling

Responsibility **:** Principal Co-Investigator
Funding Agency **:** Department of Science and Technology
Amount / Duration : Rs. 22.79 Lakhs / 2008 - 2011

3. Title of the project : Mathematical modelling of convective parametric instabilities

Responsibility **:** Principal Investigator
Funding Agency **:** Council of Scientific and Industrial Research
Amount / Duration : Rs. 12.43 Lakhs / 2009 - 2012

Research Guidance

- Post Doc.
- Ph.D.
- M.Phil.
- M.Sc.

Ongoing

Title

Name

Completed

Title

Name

Ongoing

Sl. No., Name of the candidate, Title of the Thesis, Year

1. R Gokilam

2. R Thanamani

3. N Muthusarumadhi

4. R Muthumeena

5. M Manimekalai

Completed

Sl. No., Name of the candidate, Title of the Thesis, Year

1) T Sivakumar, Thermal instability in a vibrating porous medium (2011);

2) D Brindha, Nonlinear stability of centrifugal convection in porous media (2011);

3) C Sivaraj, Combined radiation and natural convection in cavities with thermally active bodies (2013);

4) V P M Senthilnayaki, Natural convection in 3D cavities with partially active walls (2014);

5) S Keerthana, Convective instability in a gravity modulated porous medium (2015);

6) R K Brinda, Nonlinear convection in cavities filled with a heat generating porous medium (2018);

7) S Meenasaranya, Convective stability of modulated porous media (2019);

8) N Raja, Coupled radiation and convection in enclosures with inner bodies (2019);

9) M Kousalya, Convective instability in a gravity modulated nanofluid porous medium (2021);

10) S Vigneshwaran, Nonlinear stability in a rotating bidisperse medium (2022).

Ongoing

Sl. No., Name of the candidate, Title of the Thesis, Year

1. Jayashree.M

Completed

Sl. No., Name of the candidate, Title of the Thesis, Year

1) T. Sivakumar, Double diffusive Marangoni instability with throughflow (2005);

2) K. Amutha, Marangoni convection in a viscoelastic fluid layer with throughflow (2005);

3) D. Brindha, Nonlinear stability with variable viscosity (2006);

4) G.Gayathri, Onset of instability in a variable viscosity fluid saturated porous medium (2006);

5) M. Shanmugapriya, Marangoni convection in an Oldroyd-B fluid layer with throughflow (2006);

6) R. Prabhalakshmi, Instability in a fluid filled porous medium near its density maximum (2006);

7) C. Sivaraj, Natural convection in a cavity with differentially heat generating plates (2007);

8) V.P.M. Senthil Nayaki, Instability in a fluid filled porous medium with heat generation and density maximum (2007);

9)   A. R. Vidhyakumar, Natural convection in a cavity with heat generating baffles (2007);

10) M. Sivashankari, Onset of instability in a fluid saturated porous medium with heat generation (2007);

11) R. Jegajothi, Double diffusive convection in non-equilibrium porous medium with Soret and Dufour effects (2008);

12) A Purusothaman, Convection in a gravity modulated sparse porous medium heated from below (2008);

13) Arunkumar, Convection in a gravity modulated sparse porous medium heated from above (2009);

14) S. Keerthana, Double diffusive convection in a rotating porous layer with Soret effect (2009);

15) M. M. Shalini, Instability of fluid filled porous medium with viscosity variation (2009);

16) D. Premalatha, Instability in a couple stress fluid saturated porous media (2010);

17) S.B. Shalini, Effects of variable viscosity on instability in a fluid filled porous medium (2010);

18) D. Prakash, Forced convection in a porous duct with heat generation (2010);

19) R. K. Brinda, Convective instability in a gravity modulated non-Newtonian fluid saturated porous medium (2011);

20) V N Deivamani, Double diffusive convection in a nonequilibrium porous medium with gravity variation (2011);

21) S. Nirmaladevi, Onset of double diffusive convection in a porous layer using a thermal nonequilibrium model (2011);

22) R Sivasamy, Natural convection in a cavity with a heated plate (2011);

23) M Meenasaranya, Stability of a convective flow in porous media (2012);

24) N Raja, Instability in a fluid saturated porous medium with throughflow (2012);

25) M Revathi, Natural convection in a cavity with heat generating plates (2012);

26) R Saranya, Free convection in a cavity with wall mounted heat generating plates (2012);

27) K Meenatchi, Forced convection in porous saturated media (2013);

28) R. Kavitha, Instability in fluid saturated packed beds with internal heat sources and throughflow (2013);

29) M. Sangeetha, Double diffusive magnetoconvection in a cavity containing an isothermal plate (2013);

30) M Vigneswar, Instability in a non-Newtonian fluid saturated porous medium (2013);

31) R Manivannan, Double diffusive convection in a cavity containing an isothermal plate (2013).

32) N Gayathri, Convection in a non-Newtonian fluid saturated [porous medium (2014);

33) V D Kiruthika, Forced convection in a porous saturated circular tube (2014);

34) I Sadham Hussain, Convection in a porous medium duct with heat generation (2014);

35) M Kousalya, Natural convection in a non-Newtonian fluid saturated porous medium (2015);

36) S Monisha, A review of flow and heat transfer in nanofluids (2015);

37) A Renuka, A review of nanofluid flows and their applications (2015);

38) V Tharanidharan, Double diffusive convection in a porous layer with Soret effect (2015);

39) E Angeline Prashanthi, Effect of permeability on the forced flow through a porous channel with surface roughness (2016);

40) S Vigneshwaran, Gravity effects on the onset of transient convection in a porous medium (2016);

41) F Anusia Mary, Flow through a bumpy porous channel in the presence of magnetic field (2017);

42) M Kavimani, Combined effect of permeability and magnetic field on the forced flow in a porous medium (2017);

43) R Muthumeena, Well-posedness in hyperbolic diffusion theory (2018);

44) G Nithya Devi, Convection in nanofluids of non-Fourier type (2018);

45) E Ragupathi, Heat transfer in Couette flow with slip (2018);

46) B Ganeshkumar, Natural convection of water in a nonuniformly heated enclosure (2019);

47) A Fousiya, MHD forced convection through a saturated porous medium (2019);

48) S Kathiresan, Numerical study of natural convection in a partially heated enclosure filled with water (2019).

Ongoing

Sample Data.

Completed

Sample Data.

Research Publication

- International
- National
- Patents
- Conferences
- Books/Chapters
- Database

2021

53. Anisotropic thermomagnetic effects on the universal stability of a diffusive state in porous media,
S Saravanan, D Brindha and H Yamaguchi
Z. Angew. Math. Mech. (2021).

52. Onset of synchronous and asynchronous convection in modulated nanofluid filled porous media,
S Saravanan and M Kousalya,
Z. Angew. Math. Mech. (2021).

2020

51. Coupled radiative and convective heat transfer in enclosures: Effect of inner heater–enclosure wall emissivity contrast,
S Saravanan and N Raja,
Phys. Fluids 32 (9), 093606 (2020).

50. Onset of gravity modulated filtration convection in grade fluids
S Saravanan and M Kousalya,
Trans. ASME – J. Heat Transfer, 142 (9), 092701 (2020).

49. Centrifugal filtration convection in bidisperse media,
S Saravanan and S Vigneshwaran,
Phys. Fluids, 32 (8), 084109 (2020).

48. Combined radiation-convection in an air-filled enclosure with in-line heaters,
S Saravanan and N Raja,
Int. Comm. Heat Mass Transfer, 110 104399 (2020).

2019 - 2005

47. Effect of variable sidewall temperatures on the combined surface radiation-convection in a discretely heated enclosure,
S Saravanan and N Raja,
Trans. ASME - J. Heat Transfer, 140 (9), 094503 (2018).

46. Lyapunov stability of plane parallel porous convection with heat generation,
S Saravanan and M Meenasaranya,
Meccanica, 53(1,2), 497-501 (2018).

45. Thermal Nonequilibrium Effects on internal natural convection driven by a heat generating porous medium,
S Saravanan and R K Brinda,
Int. J. Mech. Sci., 135, 133-145 (2018).

44. Convective instability in a throughflow imposed heat generating porous medium with a gravity gradient,
S Saravanan and N Raja,
J. Porous Med., 20(4), 1–8 (2017).

43. Natural convection in a rectangular enclosure with an array of discrete heat sources,
S Saravanan, V P M Senthilnayaki and P Kandaswamy,
Heat Transfer Res., 48(5), 391–399 (2017).

42. Floquet instability of gravity modulated salt fingering in a porous medium ,
S Saravanan and S Keerthana,
Ind. Engng. Chem. Res., 56, 2851−2864 (2017).

41. Natural convection cooling of an array of flush mounted discrete heaters inside a 3D cavity,
V P M Senthil Nayaki, S Saravanan, X D Niu and P Kandaswamy,
Adv. Appl. Math. Mech., 9(3), 698-721 (2017).

40. Nonlinear stability of modulated Horton-Rogers-Lapwood problem,
S Saravanan and M Meenasaranya,
Int. J. Engng. Sci., 120, 71-81 (2017).

39. Combined thermal radiation and natural convection in a cavity containing a discrete heater: Effects of nature of heating and heater aspect ratio,
S Saravanan and C Sivaraj,
Int. J. Heat Fluid Flow, 66, 70-82 (2017).

38. Interaction between two mutually orthogonal heat generating baffles in a square cavity,
S Saravanan, A K Abdul Hakeem and P Kandaswamy,
Heat Transfer Engng., 38(2), 244-255 (2017).

37. Natural convection in a cubical porous cavity with partially active lateral walls,
S Saravanan and V P M Senthil Nayaki,
Int. Comm. Heat Mass Transfer, 80, 41-46 (2017).

36. The combined natural convection and thermal radiation effect in a cavity with a nonuniformly heated plate,
S Saravanan and C Sivaraj,
Comp. Fluids, 117, 125-138 (2015).

35. Internal natural convection driven by an orthogonal pair of differentially heated plates,
A K Abdul Hakeem, S Saravanan and P Kandaswamy,
Comp. Fluids, 111, 179–186 (2015).

34. Universal stability of filtration convection caused by heat generation,
S Saravanan and M Meenasaranya,
Int. J. Nonlin. Mech., 67, 39-41 (2014).

33. Natural convection in square cavity with heat generating baffles,
S Saravanan & A R Vidhya Kumar,
Appl. Math. Comput., 244, 1-9 (2014).

32. Surface radiation effect on convection in a closed enclosure driven by a discrete heater,
S Saravanan and C Sivaraj,
Int. Comm. Heat Mass Transfer, 53, 34-38 (2014).

31. Throughflow and Soret effects on the onset of Marangoni convection,
S Saravanan & T Sivakumar,
J. Engng. Math., 85, 55–64 (2014).

30. Thermorheological Effect on thermal nonequilibrium porous convection with heat generation,
S Saravanan and V P M Senthil Nayaki,

Int. J. Engng. Sci., 74, 55-64 (2014).

29. Thermovibrational filtration convection in memory fluids: Bottom and top heating,
S Saravanan and R K Brinda,
Int. J. Heat Mass Transfer, 64, 21-27 (2013).

28. On setting up of centrifugal filtration convection: Departure from thermal equilibrium,
S Saravanan and D Brindha,
Proc. Royal Soc. A: Math. Phys. Engng. Sci., 469, 20120655 (2013).

27. Coupled thermal radiation and natural convection heat transfer in a cavity with a heated plate inside,
S Saravanan and C Sivaraj,
Int. J. Heat Fluid Flow, 40, 54-64 (2013).

26. Natural convection in a differentially heated cavity with parallel heat generating baffles,
S Saravanan and C Sivaraj,
Heat Transfer Engng., 33, 1264-1271 (2012).

25. Effect of couple stress on the onset of thermovibrational convection in a porous medium,
S Saravanan and D Premalatha,
Int. J. Therm. Sci., 57, 71-77 (2012).

24. Effect of double diffusion on centrifugal filtration convection,
S Saravanan and S Keerthana,
J. Porous Media, 15 (5), 495-500 (2012).

23. Sharp nonlinear stability for centrifugal filtration convection in magnetizable media,
S Saravanan and D Brindha,
Phys. Rev. E., 84 (5), 056318 (2011).

22. Natural convection in a square cavity due to thermally active plates for different boundary conditions,
A K Abdul Hakeem, S Saravanan and P Kandaswamy,
Comp. Math. Appl., 62, 491-496 (2011).

21. Natural convection in an enclosure with a localized nonuniform heat source on the bottom wall,
S Saravanan & C Sivaraj,
Int. J. Heat Mass Transfer, 54, 2820-2828 (2011).

20. Onset of thermovibrational filtration convection: Departure from thermal equilibrium,
S Saravanan and T Sivakumar,
Phys. Rev. E., 84 (2), 026307 (2011).

19. Thermovibrational instability in a fluid saturated anisotropic porous medium,
S Saravanan and T Sivakumar,
Trans. ASME - J. Heat Transfer, 133, 051601 (2011).

18. Global stability of convective motion in a channel with a moving boundary,
S Saravanan and D Brindha,
Appl. Math. Lett., 24, 487-493 (2011).

17. Linear and nonlinear stability limits for centrifugal convection in an anisotropic layer,
S Saravanan and D Brindha,
Int. J. Nonlin. Mech., 46, 65-72 (2011).

16. Stationary fingering instability in a non-equilibrium porous medium with coupled molecular diffusion,
S Saravanan and R Jegajothi,
Trans. Porous Media, 84, 755-771 (2010).

15. Convective instability in a gravity modulated anisotropic thermally stable porous medium,
S Saravanan and A Arunkumar,
Int. J. Engng. Sci., 48, 742-750 (2010).

14. Onset of filtration convection in a vibrating medium: The Brinkman model
,
S Saravanan and T Sivakumar,
Phys. Fluids, 22, 034104 (2010).

13. Global stability of centrifugal filtration convection,
S Saravanan & D Brindha,
J. Math. Anal. Appl., 367, 116-128 (2010).

12. Floquet instability of a gravity modulated Rayleigh-Benard problem in an anisotropic porous medium,
S Saravanan and A Purusothaman,
Int. J. Therm. Sci., 48, 2085-2091 (2009).

11. Exact solution of Marangoni convection in a binary fluid with throughflow and Soret effect,
S Saravanan and T Sivakumar,
Appl. Math. Modelling, 33, 3674-3681 (2009).

10. Centrifugal acceleration induced convection in a magnetic Fluid saturated Anisotropic Rotating porous medium,
S Saravanan,
Transport Porous Med., 77, 79-86 (2009).

9. Natural convection in a cavity with orthogonal heat generating baffles of different lengths,
S Saravanan, A K Abdul Hakeem and P Kandaswamy,
Heat Transfer Res., 40(8), 805-819 (2009)

8. Thermal non-equilibrium porous convection with heat generation and density maximum,
S Saravanan,
Transport Porous Med., 76, 35-43 (2009).

7. Buoyancy convection in a square cavity with mutually orthogonal heat generating baffles,
A K Abdul Hakeem, S. Saravanan and P Kandaswamy,
Int. J. Heat Fluid Flow, 29(4), 1164-1173 (2008).

6. Buoyancy convection in a cavity with mutually orthogonal heated plates,
S Saravanan, A K Abdul Hakeem, P. Kandaswamy and J. Lee,
Comp. Math. Appl., 55(12), 2903-2912 (2008).

5. Effect of baffle-cavity ratios on buoyancy convection in a cavity with mutually orthogonal heated baffles,

P Kandaswamy, J Lee, A K Abdul Hakeem and S. Saravanan,
Int. J. Heat Mass Transfer, 51(7-8), 1830-1837 (2008).

4. A Note on the universal stability of convective flow with variable viscosity
,
S Saravanan and D Brindha,
Math. Meth. Appl. Sci., 31(7), 769-773 (2008).

3. Hydromagnetic natural convection in a partially heated cavity,
S Saravanan, A K Abdul Hakeem and P Kandaswamy,
Int. J. Heat Tech., 25 (1), 131-136 (2007).

2. Convection in an Oldroyd-B fluid layer with throughflow,
S Saravanan,
Can. J. Phys., 85, 947-955 (2007).

1. Thermal stability of a nonuniformly heat generating annular fluid layer,
S Saravanan and P Kandaswamy,
Int. J. Heat Mass Transfer, 49(1-2), 269-280 (2006).

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Alumini Reflections: