

## **BIO-DATA**

**Name** : Dr. Sudha

**Father's name** : Late A. Raghavendra Shenoy

**Address for correspondence** : Assistant Professor in Physics,  
Department of P.G. Studies in Physics,  
Kuvempu University,  
Shankaraghatta-577451  
Phone: 9449968098  
E-mail: [arss@rediffmail.com](mailto:arss@rediffmail.com)  
[1967.shenoy@gmail.com](mailto:1967.shenoy@gmail.com)

**Date of Birth** : 4<sup>th</sup> July 1967

**Gender** : Female

**Marital Status** : Unmarried

### **Educational Qualification:**

Course	Year	University	Subject	Marks obtained	Grade
S.S.L.C.,	1983	K.S.E.E.B	General	74%	First Class
P.U.C	1985	P.U. Board	Physics Chemistry Mathematics Biology	74%	First Class
B.Sc.,	1988	University of Mysore	Physics Chemistry Mathematics	77.3%	First Class <b>6<sup>th</sup> Rank</b>
M.Sc.,	1990	University of Mysore	Physics	72.5%	First Class <b>4<sup>th</sup> Rank</b>
Ph.D.,	1999	University of Mysore	Theoretical Physics		

**Title of the thesis:** *Some Algebraic Aspects of Relativity and Polarization Optics:*

**Research Guide:** Prof. A.V. Gopala Rao, Formerly Professor,  
Department of Physics, University of Mysore,  
Manasagangothri, Mysore 570006, INDIA

### Academic Experience:

- ❖ After a brief tenure of teaching, engaged in research as a research scholar in the Dept.of Studies in Physics, Manasagangothri, Mysore since 1993.
- ❖ Doctoral Degree (Ph.D.,) was awarded during 1999.
- ❖ A CSIR Research Fellowship for Post Doctoral Research was awarded during 1999 to work as Research Associate in the Department of Studies in Physics, Manasagangothri, Mysore-6.
- ❖ Worked as Lecturer in Physics at Tunga Mahavidyalaya, Thirthahalli, Shimoga District from July 2001 to July 2006.
- ❖ Co-authored the Study Material on '**Quantum and Statistical Mechanics**' for the M.Sc., Physics Course under Distance Education Scheme with Dr. H.S. Jayanna, Reader, Department of P.G. Studies in Physics, Kuvempu University during the academic year 2003-04.
- ❖ Selected as Lecturer in Physics at Department of Post Graduate Studies in Physics, Kuvempu University, Shankaraghatta during July 2006 and working there ever since.
- ❖ Successfully completed a UGC Minor research Project entitled '**Quaternionic representation of the group SO(4) in connection with that of the Lorentz Group SO(3,1)**' during 2007-08.
- ❖ Guided four M.Phil students and one Ph.D student successfully. Five Ph.D students are presently being guided.
- ❖ Awarded the D.C.Pavate Memorial Visiting Fellowship to carry out post-doctoral research at Department of Applied Mathematics and Theoretical Physics (DAMTP), University of Cambridge, Cambridge, UK. Completed a project work entitled 'Pairwise entanglement in thermal states of Quantum Ising chains' during the period from September 2010 to December 2010 at University of Cambridge.
- ❖ Co-authored the Study Material on '**Mathematical Methods in Physics**' in Self Instructional Mode(SIM) for the M.Sc., Physics

Course under Distance Education Scheme with Dr. K.S. Malleesh, Professor, Department of P.G. Studies in Physics, Mangalore University during the academic year 2014-15.

- ❖ Participated in several research schools the details of which are enclosed in 'List of Participation in Research Schools'.
- ❖ The details of the research papers published in reputed International Journals are given in 'List of Publications'
- ❖ Present research interests include Polarization Optics and Quantum Information Theory

### **LIST OF PUBLICATIONS**

- **On the algebraic characterization of a Mueller matrix in Polarization Optics. I. Identifying a Mueller Matrix from its N-matrix**

Gopala Rao A.V., Malleesh K.S. and **Sudha**, *Journal of Modern Optics*, **45**, No. 5, 955-987 (1998)

- **On the algebraic characterization of a Mueller matrix in Polarization Optics. II. Necessary and Sufficient conditions for Jones-derived Mueller matrices**

Gopala Rao A.V., Malleesh K.S. and **Sudha**, *Journal of Modern Optics*, **45**, No.5, 989-999 (1998)

- **Polarization Elements—A Group Theoretical Study**

**Sudha** and Gopala Rao A.V., *Journal of Optical Society of America A*, **18**, No. 12, 3130-3134 (2001)

- **Non-Local Properties of a symmetric two qubit system**

A.R. Usha Devi, M.S. Uma, R. Prabhu and **Sudha**, *Journal of Optics B: Quantum and Semiclassical Optics*, **7**, S740-S744 (2005)

- **Local Invariants and Pairwise Entanglement in Symmetric Multiqubit Systems**

A.R. Usha Devi, M.S. Uma, R. Prabhu and **Sudha**, *International Journal of Modern Physics B*, **20**, No. 11-13, 1917-1933 (2006)

- **Positive-operator-valued-measure view of the ensemble approach to Polarization optics**

**Sudha**, A.V.Gopala Rao, A.R. Usha Devi and A.K.Rajagopal, *Journal of Optical Society of America A*, **25**, No. 4, 874--890 (2008)

- **Entropic characterization of separability in Gaussian states**

**Sudha**, A.R. Usha Devi and A.K.Rajagopal, *Physical Review A* **81**, 024303 (2010)

- **Loss of exchange symmetry in multiqubit states under Ising chain evolution**

**Sudha**, Divyamani B.G and A.R. Usha Devi, *Chin.Phys.Lett.* Vol. 28, No. 2, 020305 (2011)

- **Open-system quantum dynamics with correlated initial states, not completely positive maps, and non-Markovianity**

A.R. Usha Devi, A.K.Rajagopal and **Sudha**, *Physical Review A* **83**, 022109 (2011)

- **Quantumness of correlations and entanglement**

A. R. Usha Devi, A. K. Rajagopal and **Sudha**, *International Journal of Quantum Information*, **9**, Nos. 7 & 8, 1757-1771 ((2011)

- **Monogamy of quantum correlations in three-qubit pure states**

**Sudha**, A. R. Usha Devi and A. K. Rajagopal, *Physical Review A*, **85**, 012103 (2012)

- **Interplay of Quantum Stochastic and Dynamical Maps to Discern Markovian and Non-Markovian Transitions**

A.R. Usha Devi, A.K. Rajagopal, **Sudha Shenoy**, **R.W. Rendell**, *Journal of Quantum Information Science (JQIS)*, **2**, 47-54 (2012)

- **Majorana representation of symmetric multiqubit states** (Review article)

A. R. Usha Devi, **Sudha** and A. K. Rajagopal, *Quantum Information Processing*, **11**, 685-710 (2012)

- **Quantum discord and classical correlation can tighten the uncertainty principle in the presence of quantum memory**

Arun K. Pati, Mark M. Wilde, A. R. Usha Devi, A. K. Rajagopal and **Sudha**, *Physical Review A* **86**, 042105 (2012)

- **Macrorealism from entropic Leggett–Garg inequalities**

A.R. Usha Devi, H. S. Karthik, **Sudha** and A. K. Rajagopal, *Physical Review A* **87**, 052103 (2013)

- **Is composite noise necessary for sudden death of entanglement?**

K. O. Yashodamma and **Sudha**, *Results in Physics* **3**, 41–45 (2013)

- **Thermal Entanglement in a Two-qubit Ising chain subjected to Dzyaloshinsky–Moriya Interaction**

B. G. Divyamani and **Sudha**, *Chinese Physics Letters* **30**, 120301 (2013)

- **Purification and redistribution of entanglement via single local filtering**

K. O. Yashodamma, P.J. Geetha and **Sudha**, *International Journal of Quantum Information* **1**, 145004 (2014)

- **Effectiveness of depolarizing noise in causing sudden death of entanglement**

K. O. Yashodamma, P.J. Geetha and **Sudha**, *Quantum Information Processing*, **13**, 2551 (2014)

- **From the quantum relative Tsallis entropy to its conditional form: Separability criterion beyond local and global spectra**

A. K. Rajagopal, **Sudha**, Anantha S. Nayak and A.R. Usha Devi, *Physical Review A*, **89**, 012331 (2014)

- **What Does Monogamy in Higher Powers of a Correlation Measure Mean?**

P.J. Geetha, **Sudha** and A.R.Usha Devi *Journal of Modern Physics*, **5**, 1294 (2014)

- **Quantum which-way information and fringe visibility when the detector is entangled with an ancilla**

J. Prabhu Tej, H.S. Karthik, A.R. Usha Devi, **Sudha** and A.K. Rajagopal, *Physical Review A*, **89**, 062116 (2014)

## LIST OF PARTICIPATION IN RESEARCH SCHOOLS

### Participated in

- ✚ The Winter School on "Manifolds and Physics" held at the Department of Physics, Bharatidasan University, Tiruchirapalli, during December 21, 1992 to January 9, 1993.
- ✚ The Inter-University Graduate School on "Large Scale Structure in the Universe" held at the Department of Studies in Physics, University of Mysore, Mysore, during November 21, 1994 to December 10, 1994.
- ✚ The second SERC School on "Special Functions and Functions of Matrix Argument" conducted by the Centre for Mathematical Sciences, Trivandrum during May 29, 2000 to June 30, 2000.
- ✚ The SERC School on "Quantum Information and Quantum Optics" held at the Physical Research Laboratory, Navrangpura, Ahmedabad during February 1<sup>st</sup>, 2004 to February 14<sup>th</sup>, 2004.
- ✚ All India Refresher Course in Theoretical Physics conducted by the Indian Academy of Sciences in collaboration with Bishop Moore College, Mavelikara, Kerala from 7<sup>th</sup> December 2009 to 19<sup>th</sup> December 2009
- ✚ All India Refresher Course in Statistical Physics by the Indian Academy of Sciences in collaboration with Nehru Arts and Science College, Kanhangad from 8<sup>th</sup> May 2013 to 21<sup>st</sup> May 2013
- ✚ The First School on Quantum Information Processing organized by Institute of Mathematical Sciences, Chennai from 19<sup>th</sup> January to 31<sup>st</sup> of January 2014.
- ✚ Gave two lectures on **``Quantum Statistical Mechanics``** at the **Refresher Course for Physics Teachers** conducted by **Academic Staff College, Bangalore** on 26<sup>th</sup> March 2014

## Conferences/Symposia/Workshop

➤ **Pairwise entanglement properties of a symmetric multi qubit system**

A.R. Usha Devi, M. S. Uma, R. Prabhu and **Sudha**,  
XVI-DAE-BRNS High Energy Physics Symposium held at Saha  
Institute of Nuclear Physics, Kolkata, India, during 29<sup>th</sup>  
November to 3rd December 2004.

➤ **Non-local properties of a symmetric two-qubit system**

A.R. Usha Devi, M. S. Uma, R. Prabhu and **Sudha**  
Seventh International Conference on Photoelectronics, Fiber  
Optics and Photonics held at International School of Photonics,  
Cochin University of Science and Technology, Kochi, India,  
during 9-11 December 2004.

➤ **Separability, negativity, concurrence and local invariants of symmetric two qubit states**

A. R. Usha Devi, M. S. Uma, R. Prabhu and **Sudha**  
International Conference on Squeezed States and Uncertainty  
Relations (ICSSUR'05) held at Besancon, France, during 2-6 May  
2005.

➤ **Higher order spin squeezing**

R. Prabhu, A. R. Usha Devi and **Sudha**  
International School and Conference on Quantum Information  
(ISCQI-2008) held at Institute of Physics, Bhubaneswar, Orissa  
during 4th - 12th March, 2008.

➤ **Pairwise entanglement in thermal states of Quantum Ising Chains**

**Sudha** and Divyamani B.G.

International School and Conference on Quantum Information

Procession and Applications (QIPA-2011) held at Harishchandra Research Institute, Allahabad during 14<sup>th</sup>-20<sup>th</sup> February 2011

➤ **. Open system quantum dynamics and signatures of non-Markovianity**

Oral presentation at International School and Conference on Quantum Information held at Institute of Physics, Bhubaneswar from 19<sup>th</sup> -22<sup>nd</sup> December 2011

➤ **Monogamy of Quantum Correlations**

Invited talk at International Workshop on Quantum Information (IWQI-2012) held at Harishchandra Research Institute (HRI), Allahabad during 20<sup>th</sup> -26<sup>th</sup> February 2012

➤ **Macrorealism from entropic Leggett-Garg inequalities**

Invited talk at International Conference on Quantum Information and Quantum Computation (ICQIQ-2013) held at Indian Institute of Science during 6<sup>th</sup> -11<sup>th</sup> January 2013

➤ **Local Invariant Spin-Squeezing criteria for multiqubit states**

Invited talk at International Workshop on Quantum Information Processing and Applications (QIPA-2013) held at Harishchandra Research Institute (HRI), Allahabad during 2<sup>nd</sup> December -8<sup>th</sup> December 2013

**OTHER INTERESTS AND ACTIVITIES**

- o An article on the life and achievements of a great teacher, **Prof. K.N. Srinivasa Rao, formerly Professor of Theoretical Physics**, University of Mysore, originally written by Prof. K.S.Mallesha Professor, Department of Physics has been translated by me into Kannada. The kannada article appeared in the science journal '**Vijnana Karnataka**' (Volume Nos. 38-40, Page No. 97-102, (2012)) published by **Prasaranga, University of Mysore**

- o A Kannada article on **Ludwig Boltzmann, a pioneer scientist** has been published in the Science Journal, Vijnana Karnataka (Volume Nos. 38-40, Page No. 103-114, (2012)) published by **Prasaranga, University of Mysore.**
  
- o An article titled '**Dr. Shantinath Desai- A Staunch Votary of Modernism**' is published in the first issue of e-journal 'ideas & ideologies' (ISSN No. 2320-7744; Vol. 1, Issue 1. March 2013) published by the Women's Resource Center, Kuvempu University.
  
- o An article '**Science needs Women...**' is published in the Commemorative volume (celebrating silver jubilee of the University) '**Visualisation of Women in Media, Literature and Science**' published jointly by Prasaranga and Women's Resource Center, Kuvempu University.

\* \* \*