

Somasri Sen

ASSISTANT PROFESSOR
Department of Physics,
Faculty of Natural Sciences,
Jamia Millia Islamia, New Delhi- 110025.

E-MAIL: ssen@jmi.ac.in
E-MAIL: somasri.sen@gmail.com

BRIEF PROFILE

- PH.D in Science from JADAVPUR UNIVERSITY in 1999.
- Area of research interest: COSMOLOGY, GRAVITATION AND ASTROPARTICLE PHYSICS.
- POST-DOCTORAL RESEARCH experince for *more than six years* in different universities and institutes, both in *India and abroad*
- RESEARCH ARTICLES publised so far *26* in internationally reputed research journals.
- AVERAGE CITATION is *38* and H INDEX FACTOR is *16*.
- Collaborated with scientists from *India, Spain, Germany and Portugal*
- TEACHING in *under graduate and post graduate* level in India for the *last 5 years*. Also worked as Teaching Assistant for Physics Graduate courses in USA for one and half year.

EDUCATION

PH. D. IN SCIENCE : Jadavpur University, Calcutta, 1999.

TITLE OF THE THESIS: Some Aspects Of Scalar Fields In Homogeneous And Inhomogeneous Spacetimes.

SUPERVISOR: Prof. N. Banerjee.

M.SC IN PHYSICS:Jadavpur University, Calcutta, 1994 (*Rank: 2nd*)

B.SC (HONS.): Jadavpur University, Calcutta, 1992 (*Rank: 2nd*)

RESEARCH AREA

COSMOLOGY, GRAVITATION AND ASTROPARTICLE PHYSICS.

EXPERIENCE

• POST DOCTORAL EXPERIENCE

- HARISH-CHANDRA RESEARCH INSTITUTE (HRI) in *Allahabad, India* from February 2000 to June 2002.
- CAAUL, UNIVERSITY OF LISBON, in *Portugal* from July 2002 to August 2004.
- INTER UNIVERSITY CENTER FOR ASTRONOMY AND ASTROPHYSICS (IUCAA) in *Pune, India* from November 2004 to April 2005.
- CENTER FOR THEORETICAL PHYSICS, J.M.I., New Delhi as *Dr. D.S.Kothari Post Doctoral Fellow (U.G.C)* from July 2008 to July 2009.

• TEACHING EXPERIENCE

- Joined as an ASSISTANT PROFESSOR in the *Dept. of Physics at Jamia Millia Islamia* in Sept, 2011.
Courses - For B.Sc - Advanced Quantum Mechanics, Waves and Oscillations, Basic Electronics and Laboratories. For M.Sc - Electrodynamics.
- GUEST LECTURER in Physics in the *Department of BioSciences* at JMI in 2010-2011.
Courses- Physics course for B.Sc 1st year and 2nd Year and Laboratories.
- ADHOC LECTURER in Physics in *St. Stephens College, New Delhi* in 2009-2010.
Courses - Waves & Optics (B.Sc Hons 2nd year), Electricity and Magnetism (BSc Program), B.Sc Laboratories.
- GUEST LECTURER in Physics in the *Department of Physics at Jamia Millia Islamia* in 2008-2009.
Courses - Mathematical Physics in M.Sc(Prev).
- ADHOC LECTURER in Physics in *St. Stephens College, New Delhi* in 2007-2008.
Courses - Electricity and Magnetism (B.Sc Hons 1st tear), Thermal Physics (BSc Program 2nd Year) and B.Sc Laboratories.
- TEACHING ASSISTANT (Grader) for the Graduate Physics courses in the *Department of Physics and Astronomy, at Vanderbilt University, in Nashville, USA*.
Courses - Classical Mechanics, Advanced Electrodynamics, Statistical Mechanics and General Relativity.

SCHOLARSHIPS & FELLOWSHIPS

- NATIONAL MERIT SCHOLARSHIPS from *Govt. of India* for good performances in SECONDARY, HIGHER SECONDARY, B.Sc Exam.
- JRF & SRF from *U.G.C* for qualifying GATE-94 organised by Dept. of Edu., MHRD.
- ExSRF from *CSIR* in 1999.
- RESEARCH ASSOCIATESHIP from *CSIR* in 2000. Didn't avail.
- VISITING FELLOWSHIP from *Harish Chandra Research Institute, Allahabad* from 2000-2002.
- VISITING FELLOWSHIP from *IUCAA, Pune* in 2002. Didn't avail.
- VISITING FELLOWSHIP from *CAAUL, University of Lisbon, Portugal* funded by FCT, Portugal from 2002-2004.
- VISITING FELLOWSHIP from *IUCAA, Pune* from 2004-2005.
- DR.D.S.KOTHARI POST DOCTORAL FELLOWSHIP from *U.G.C* in 2008.

PROJECT:

TITLE: *In search for modified theories of gravity*

FUNDING AGENCY: DST (Fast Track Scheme)

PERIOD: April, 2011 - April 2014

CONFERENCES, VISITS & TALKS (2007 Onwards):

- Visited **HRI**, Allahabad, India in August, 2007.
- Visited **HRI**, Allahabad, India in September, 2008 for some collaborative work.
- Delivered a lecture at IRC in Department of Physics and Astrophysics of Delhi University in March 2009.
- Visited **HRI**, Allahabad, India in August, 2010.

- Visited **Indian Association for Cultivation of Science**, Kolkata, India in December, 2010.
- Delivered a talk at **SINP**, Kolkata, India in March, 2011.
Talk: *Bulk Antisymmetric tensor fields in Randall Sundrum scenario*
- **IUCAA school on Gravitation and Astrophysics** at Centre for Theoretical physics, JMI, New Delhi in March, 2011.
- Visited **HRI**, Allahabad, India in May, 2011.
- Visited **IUCAA**, Pune, India in June, 2011.
- **International Workshop on Dark Energy** Centre for Theoretical physics, JMI, New Delhi in December, 2011.
Talk: *GCG parametrization for growth function using current constraints.*
- **27th meeting of Indian Association for General Relativity and Gravitation (IAGR 27)**, Dept.of Physics, H N B Garhwal University, Srinagar, Uttarakhand in March 7-9, 2013.
Talk: *GCG parametrization for growth function using current constraints.*
- **9th Field Theoretic Aspects of Gravity (FTAG)**, IIT Gandhinagar from September 5-8, 2013.
- **UGC sponsored 106th Orientation Program**, UGC-ASC, Jamia Millia Islamia from 21st October to 20th November, 2013.
Talk: *"The Dark side of the Universe"*.
- **Symposium on Astro-Particle and Nuclear Physics** CTP, Jamia Millia Islamia on 21-22 January 2014.
- **GMW Workshop on DST Fast Track proposal** IISER, Bhopal from 11-13 April 2014.
Talk: *"In search of modified theories of gravity"*.
- **Popular Science Lecture Series on Astronomy and Astrophysics** National Science Center, New Delhi on 28th August 2014.
Talk: *"Frontiers of Cosmology II"*
- **"International Conference on Matters of Gravity and Universe"** CTP, Jamia Millia Islamia on 27-29 October, 2014.
- **"Workshop on Cosmology with Large Scale Structures"** CTP, Jamia Millia Islamia on 5-9 January, 2015.

LIST OF PUBLICATIONS

- 1. Toward Characterization of fields leading to black hole hair**
N.Banerjee and Somasri Sen
Accepted for publication in Pramana, *arXiv* :1307.1520
- 2. Matter-gravity interaction in a multiply warped braneworld**
Biswarup Mukhopadhyaya, Somasri Sen and Soumitra SenGupta.
J. Phys. G, **40** 015004 (2013).
- 3. GCG Parametrization for Growth Function and Current Constraints**
Gaveshna Gupta, Somasri Sen and Anjan A Sen.
Accepted for publication in JCAP. *arXiv*:1110.0956.
- 4. The thawing dark energy dynamics: Can we detect it?**
S. Sen, A.A. Sen and M. Sami.
Physics Letters, **686**, 1 (2010).
- 5. A Randall-Sundrum scenario with bulk dilaton and torsion.**
Biswarup Mukhopadhyaya, Somasri Sen, Soumitra SenGupta
Phys.Rev., **D79** 124029 (2009).
- 6. Bulk antisymmetric tensor fields in a Randall-Sundrum model**
Biswarup Mukhopadhyaya, Somasri Sen, Soumitra SenGupta
Phys.Rev.(Rapid Communication), **D76**, 121501, (2007).
- 7. Latest Supernova data and the generalised chaplygin gas**
O.Bertolami, A.A.Sen, S.Sen and P.T.Silva,
Mon.Not.Roy.Astron.Soc., **353**, 329 (2004);*astro-ph/0402387*.
- 8. Bulk Kalb Ramond field in Randall Sundrum scenario**
B.Mukhopadhyaya, Siddhartha Sen, S.Sen and S.SenGupta,
Phys. Rev., **D 70**, 066009 (2004);*hep-th/0403498*.

9. **CMB constraints on interacting cosmological models**
D.Pavón, S.Sen and W.Zimdahl,
JCAP, **0405**, 009 (2004); *astro-ph/0402067*.
10. **WMAP constraints on Cardassian Model**
A.A.Sen and S.Sen,
Phys. Rev. D, **68**, 023513 (2003); *astro-ph/0303383*.
11. **Observational constraints on Cardassian Expansion**
S.Sen and A.A.Sen,
Astrophys. J., **588**, 1 (2003); *astro-ph/0211634*.
12. **Parity violation and torsion: a study in four and higher dimensions**
B.Mukhopadhyaya, S.Sen, S.SenGupta and S.Sur,
Eur. Phys. J., **C 35**, 129 (2004); *hep-th/0207165*.
13. **Does a Randall-Sundrum scenario create the illusion of a torsion free universe?**
B.Mukhopadhyaya, S.Sen and S.Sengupta,
Phys.Rev.Lett., **89**, 121101 (2002); *hep-th/0204242*.
14. **Bulk torsion fields in theories with large extra dimensions**
B.Mukhopadhyaya, S.Sen and S.Sengupta,
Phys.Rev., **D65**, 124021 (2002).
15. **Periodic distribution of galaxies in scalar tensor theory**
N.Banerjee, D.Pavon and S.Sen,
Gen. Rel. Grav., **35**, 851 (2003).
16. **Cosmology in scalar tensor theory and asymptotically de-Sitter universe**
A.A.Sen and S.Sen,
Mod.Phys.Lett.A, **16**, 1303 (2001).
17. **On the detection of scalar hair**
N.Banerjee, S.Sen and N.Dadhich,
Mod.Phys.Lett.A, **16**, 1223 (2001).

18. **Late time acceleration in Brans Dicke cosmology**
S.Sen and A.A.Sen,
Phys.Rev., **D 63**, 124006 (2001).
19. **Dissipative fluid in Brans-Dicke theory and late time acceleration**
A.A.Sen, S.Sen and S.Sethi,
Phys.Rev., **D 63**, 107501 (2001).
20. **Self interacting Brans Dicke Cosmology and Quintessence**
S.Sen and T.R.Sheshadri,
Int.J.Mod.Phys.D, **12** 445 (2003).
21. **On the absence of scalar hair for charged rotating black holes in non-minimally coupled theories**
S.Sen and N.Banerjee,
Pramana, **56**, 487 (2001).
22. **No scalar hair theorem for a charged spherical black hole**
N.Banerjee and S.Sen
Phys.Rev., **D 58**, 104024 (1998).
23. **Power law inflation and scalar field cosmology with a causal viscous fluid**
N.Banerjee and S.Sen,
Phys. Rev, **D 57**, 4614 (1998).
24. **Exact scalar field cosmology with causal viscous fluid**
N.Banerjee and S.Sen,
Astrophys. and Spacesc., **254**, 133 (1997).
25. **Does Brans Dicke theory always yield General Relativity in the infinite ω limit?**
N.Banerjee and S.Sen,
Phys. Rev, **D 56**, 1334 (1997).
26. **Einstein Pseudotensor and the Total Energy of the Universe**
N.Banerjee and S.Sen,
Pramana **49**, 609 (1997).