

LIST OF PUBLICATIONS

SHOBHIT MAHAJAN

Journal Articles

1. “Models of inflation with a low supersymmetry breaking scale”,(with P. Binetruy), **Nuclear Physics B** **263**, pg **413-** (**1986**).
2. “A mechanism for baryon generation in super symmetric cosmologies”, **Physical Review, D** **33**, pg **338-** (1986).
3. “Cosmological models consistent with SUSY compactification in superstring theories”, (with A. Mukherjee, R. P. Saxena, S. Kumar, and N. Panchapakesan), **Pramana** **34**, No. **5**, pg **415-** (1990).
4. “A lower bound on the Higgs boson and Top quark mass from constraint on the Higgs coupling”, (with A. Mukherjee, S. K.Sethi, N. Panchapakesan and R. P. Saxena), **Modern Physics Letters A**, Vol. **6**, No. **18**, pg **1731-** (1991).
5. “Dark Matter: Why and What ?”, Invited Talk at the X DAE-HEP Symposium , **Pramana Suppl. Vol. 41**, pp **455-**(1993).
6. “RG improved bounds on Higgs and top mass from electroweak baryogenesis”, (with S. K. Sethi, N. Panchapakesan, R. P. Saxena, A. Mukherjee and A.S. Mazumdar), **Modern Physics Letters A**, Vol. **9**, No. **5**, pg. **459-** (1994).
7. “Studies in Structure formation in theories with a repulsive long range gravitational force”, (with D. Lohiya, A. Batra, S. Mehra and A. Mukherjee) , paper presented at the III International Conference on Gravitation & Cosmology, Pune, 1995, preprint **gr-qc/9601039**, **Astrophysical and Astronomical Transactions**,Vol. **13**, pg **1-** (1997).
8. “Constraints on the Cosmological Constant from Gravitational Lenses in an Evolutionary Model of galaxies” ,(with D. Jain, V.B. Bhatia and N. Panchapakesan), preprint **astro-ph/9803128**, **International Journal of Modern Physics A**, Vol. **13**, No. **24**, pg. **4227-36** (1998).
9. “Topological Defects in the Left-Right Symmetric Models and their relevance to cosmology”, (with U.Yagnik, H.Widyan, A. Mukherjee and D. Choudhury), preprint **hep-ph/ 9812406**, **Physical Review D**, May **15** (1999).

10. "Gravitational Lensing Limits on Average Redshift of Gamma Ray Bursts from evolving galaxies", (with D. Jain, N. Panchapakesan and V.B. Bhatia), paper presented at the XIX Astronomical Society of India Meeting, Bangalore, 1999, **preprint astro-ph/9902154, International Journal of Modern Physics D, Vol. 8, No. 4, pg. 507-514 (1999).**
11. "Limit on Average Redshift of Gamma Ray Bursts from evolving galaxies", (with D. Jain, N. Panchapakesan, V. B. Bhatia), **Bulletin Of Astronomical Society of India, Vol. 28, pg. 377- (2000).**
12. "Constraint On Galaxy Evolution Through Gravitational Lensing Statistics", (with D. Jain, N. Panchapakesan, V. B. Bhatia), **preprint astro-ph/991104, Modern Physics Letters A, Vol. 15, No. 1, pg. 41- (2000).**
13. "Nucleosynthesis in a universe with a linearly evolving scale factor", (with A. Batra, A. Mukherjee and D. Lohiya), **International Journal of Modern Physics D, Vol. 10, No.1 (2001).**
14. "A Freely Coasting Universe" (with S. Gehlaut, D. Lohia and A. Mukherjee), **preprint astro-ph/0209209, Spacetime & Substance, 14/4 (2002)**
15. "Cosmic Equation of State, Gravitational Lensing Statistics & Merging of Galaxies", (with A. Dev, D. Jain, N. Panchapakesan and V.B. Bhatia), **preprint astro-ph/0104076, International Journal of Modern Physics D, vol. 12, no. 1, pg 101- (2003) .**
16. "Gravitational Lensing constraint on the Cosmic Equation of State", (with A. Dev , D. Jain, N. Panchapakesan and V.B. Bhatia), **preprint astro-ph/0105551, International Journal of Modern Physics D, Vol.12, No. 2 (2003)**
17. "Probing large distance higher dimensional gravity from lensing data", (with S.R.Choudhury, G.C.Joshi and Bruce Mckellar), **preprint hep-ph/0204161, Astroparticle Physics Vol. 21, No. 5, pg. 559- (2004)**
18. "Dark Energy & the study of the Observed Image Separations of the Multiply Imaged Systems in the CLASS Statistical Sample", (with A. Dev and D. Jain), **preprint astro-ph/0307441, International Journal Of Modern Physics-D, Vol. 13, No. 6 , pg 1005- (2004) .**
19. "Effect of radiation on the stability of equilibrium points in the binary stellar systems: RW-Monocerotis, Kruger 60", (with M.K. Das, Pankaj Narang, M. Yuasa), **Astrophysics & Space Sciences , 314, 4, pg 261- (2008).**

20. “Effect of radiation on the stability of a retrograde particle orbit in different stellar systems”, (with M.K. Das, Pankaj Narang, M. Yuasa), **Planetary & Space Science**, **57**, pg **836-** (2009).
21. “On Out of Plane Equilibrium Points in Photo-Gravitational restricted three-body problem”, (with M.K. Das, Pankaj Narang, M. Yuasa), **Journal of Astrophysics & Astronomy**, **30**, 3-4, pg **177-** (2009).
22. “Transition Redshift: New constraints from parametric and nonparametric method”, (with Nisha Rani, Deepak Jain, Amitabha Mukherjee and Nilza Pires), **Journal of Cosmology & Astrophysics**, **12**, **045** (2015).
23. “Revisiting the Distance Duality Relation using non-parametric regression technique.”, (with Akshay Rana, Deepak Jain, and Amitabha Mukherjee), arXiv: 1511.09223v1 [astro-ph.CO] **Journal of Cosmology & Astrophysics**, **2016(07)**, **026-** (2016).
24. “Constraining cosmic curvature by using age of galaxies and gravitational lenses”, (with Akshay Rana, Deepak Jain, and Amitabha Mukherjee), arXiv:1611.07196v1 [astro-ph.CO] **Journal of Cosmology & Astrophysics**, **2017(03)**, **028-** (2017).
25. “Revisiting dark energy models using differential ages of galaxies”, (with Nisha Rani, Deepak Jain, Amitabha Mukherjee & Marek Biesiada), arXiv: 1612.07492 [astro-ph.CO] **Journal of Cosmology & Astrophysics**, **2017(03)**, **005-** (2017).
26. “Probing the Cosmic Distance Duality relation using time delay lenses”, (with Akshay Rana, Deepak Jain, Amitabha Mukherjee & R.F.L. Holanda), arXiv: 1705.04549 [astro-ph.CO] **Journal of Cosmology & Astrophysics** **2017**, **07** (2017) **010**.
27. “Probing Graviton mass using weak lensing and SZ effect in Galaxy Clusters”, ((with Akshay Rana, Deepak Jain, Amitabha Mukherjee), arXiv: 1801.03309[astro-ph.CO], **Physics Letters B**, **781**, **220-** (2018).
28. “Direct calculation of time varying Aharonov Bohm effect”, (with S. Rai Choudhury), arXiv:1903.04138[quant-ph, hep-th] **Physics Letters A**. **383**(2019), **2467-**.
29. “ Constraining Cosmological and Galaxy Parameters using Strong Gravitational Lensing Systems”, (with Darshan Kumar, Deepak Jain, Amitabha Mukherjee & Nisha Rani), arXiv:2002.06354[astro-ph] **Physical Review-D** **103**, **063511**, **2021**.

30. “A Model-Independent test of Variability of Type Ia Supernova and CDDR”, (with Darshan Kumar, Akshay Rana, Deepak Jain, Amitabha Mukherjee & R.F.L. Holanda), arXiv:2107.04784 [astro-ph] **Journal of Cosmology & Astrophysics**, **053**, **2022**.
31. “Constraints on the Transition Redshift using Hubble Phase Space Portrait”, (with Darshan Kumar, Akshay Rana, Deepak Jain & Amitabha Mukherjee), arXiv: :2205.13247 [astro-ph]. **Vol. 32, No. 6, 2350039 International Journal of Modern Physics- D**.
32. “Gamma Rays Bursts: A Viable Cosmological Probe?”, (with Darshan Kumar, Nisha Rani, Deepak Jain & Amitabha Mukherjee), arXiv: :2212.05731 [astro-ph] **Journal of Cosmology & Astrophysics**, **21**, **Vol. 07, 2023**.
33. “Exploring Various Dark Matter Halo Profiles in Milky Way and Andromeda Galaxies within the Framework of Standard Cosmology”, (with Darshan Kumar, Nisha Rani, Deepak Jain & Amitabha Mukherjee), arXiv: :2501.13861 [astro-ph]. **Research in Astronomy & Astrophysics.**, **Vol 25, Number 7, pg 075005, 2025**
34. “A cosmographic analysis using DESI-DR2 and strong lensing: I. Time-Delay measurements”, (with Darshan Kumar & Deepak Jain), arXiv: 2511.00788 [astro-ph], **Submitted to Chinese Journal of Physics**, 2025.
35. “A cosmographic analysis using DESI-DR2 and strong lensing: II. Distance Ratio measurements”, (with Darshan Kumar & Deepak Jain), arXiv: 2511.00789 [astro-ph], **Chinese Journal of Physics**, **Vol. 103, pg.648- , 2026**

Invited Lectures & Conference Proceedings

1. “Introduction to Inflationary Models”, Invited Lectures, **1987 UGC School on Early Universe**.
2. “Early Universe”, Invited lectures, **SERC School in High Energy Physics, (1988)**.
3. “Can the Many Worlds Interpretation solve the measurement problem”, (with R. Nair), **Paper presented at ISQR 1989-90 (1989)**.
4. “Dark Matter: Why and What ?”, Invited Talk at the X DAE-HEP Symposium , **Pramana Suppl. Vol. 41, pg 455- (1993)**.

5. “Light Element synthesis in a cosmological model with repulsive gravity”, (with D. Lohiya and A. Mukherjee), **Paper presented at the XVII International Symposium on Lepton-Photon Interactions, Beijing (1995)**.
6. “Constraints on the Cosmological Constant from Gravitational Lenses”, (with D. Jain, V.B. Bhatia and N. Panchapakesan), **paper presented at the XII DAE Symposium, Guwahati (1996)**.
7. “Effect of galaxy evolution on the average redshift of GRBs”, (with D. Jain, N. Panchapakesan and V.B. Bhatia), **paper presented at the XIII, High Energy Physics Symposium, Chandigarh (1998)**.
8. “Gravitational Lensing Bound on the Average Redshift of Gamma Ray Bursts in models with evolving lenses”, (with D. Jain, N. Panchapakesan and V.B. Bhatia), **paper presented at the Mini Workshop on Gamma Ray Bursts, IUCAA (1999)**.
9. “Gravitational Lens Statistics and their use in constraining evolution of galaxies”, (with D. Jain, N. Panchapakesan, V. B. Bhatia), **paper presented at the IV International Conference on Gravitation and Cosmology, Kharagpur, (2000)**.
10. “A Concordant Linear Coasting Cosmology” (with S. Gehlaut, D. Lohia and A. Mukherjee), **Paper presented at PASCOS, T.I.F.R, Mumbai (2003)**.

Preprints & Reports

1. “Topics in Inflationary Cosmologies”, PhD Thesis, **LBL - 21436 (1986)**.
2. “Cosmological Lower limit on Higgs boson mass in presence of a heavy fermion”, (with A. Mukherjee, S. K. Sethi, N. Panchapakesan and R.P. Saxena), **Delhi University Report, (1993)**.
3. “Helium Production in a cosmological model with a linearly evolving scale factor”, (with D. Lohiya and A. Mukherjee) , **Delhi University Report (1995)**.
4. “Nucleosynthesis in a simmering universe”, (with D. Lohiya, A. Batra, and A. Mukherjee), paper presented at the XII DAE Symposium, Guwahati (1996) **preprint astro-ph/ 9606082**
5. “Effect of Galaxy Evolution on the Statistical Properties of Gravitational Lenses”, (with D. Jain, N. Panchapakesan and V.B. Bhatia), **preprint astro-ph/9807192, (1998)**.

6. “Topological defects and conditions for baryogenesis in the Left-Right symmetric model”, (with U.Yagnik, H.Widyan, A. Mukherjee and D. Choudhury), **preprint hep-ph/ 9805276 (1998)**.
7. “ Constraints on Cosmological and Galaxy Parameters from Strong Gravitational Lensing Systems”, (with Darshan Kumar, Deepak Jain, Amitabha Mukherjee & Nisha Rani), **astro-ph/2002.06354 (2020)**.

Reports & Contributions to Edited Volumes

1. **“Issues in Higher Education in Science”**, Observer Research Foundation, 2007.
(<http://people.du.ac.in/sm/smweb/report1.pdf>)
2. Contributed a paper on **“Of Pain Waves, Plastic Surgery & Pachgavya: The Quest for Hegemony in the Natural Sciences”**, in **“The Idea of A University”**, edited by Apoorvanand, Westland Books (2018).
3. Contributed a paper on **“In Search of a Scientific Public Sphere”**, in **“The University Unthought”**, edited by Debaditya Bhattacharya, Routledge India (2018).
Edited by S. Irfan Habib (2018).
4. Contributed a chapter on **“Science & Mathematics Teaching in Schools & Colleges in India”** to a **‘Routledge Handbook of Education in India- Debates, Practices & Policies’**, Edited by Krishna Kumar (2017).

Textbooks & Popular Science Books

1. **“More than 150 Unusual facts about Computers”**, published by Scholastic Inc.(2002)
2. **“More than 150 Unusual Inventions”**, published by Scholastic Inc.(2003)
3. **“Eminent Scientists”**, published by Scholastic Inc.(2003)

4. **“More than 150 Unusual facts about Physics”**, published by Scholastic Inc.(2004)
5. **“From Bugs to Blackholes”**, Puffin Books. (2005)
6. **“Environment in my pocket”**, Scholastic Inc. (2006).
7. **“103 Scientific Principles, Ideas, Theories & Stuff”**, Scholastic Inc. (2006).
8. **“The Story of Steel”**, a set of 4 books for young adults, Pratham Books, (2007).
9. **“Physics in my Pocket- A Reference Book”**, Scholastic Inc.(2007).
10. **“ A Quiz Book of Physics”**, Scholastic Inc. (2008).
11. **“A Quiz Book of Mathematics”**, Scholastic Inc. (2008).
12. **“The Story of Invention”**, Ullman Publishing. (2008).
13. **“Concepts of Modern Physics, Sixth Edition”** (with A. Beiser & S. Rai Choudhury), McGraw Hill. (2009).
14. **“The Story of Science”** Ullman Publishing. (2010).
15. **“Scholastic Quiz Book”** Scholastic Publishing. (2010).
16. **“Get the Facts: Physics”**, Scholastic Publishing. (2010).
17. **“Electricity, Magnetism & Electromagnetic Theory”**, (with S.Rai Choudhury), Mcgraw Hill. (2012).
18. **“Get the Facts- Computer & Information Technology”**, Scholastic Inc. (2013).
19. **“Concepts of Modern Physics, Seventh Edition”** (with A. Beiser & S. Rai Choudhury), McGraw Hill. (2015).
20. **“Science & Society”**. Manuscript under preparation.