

# Prof. M. Sami

**FASc, FNASc**

*Recipient of President of India Visitor's Award*

*Director, Centre for Cosmology and Science Popularization (CCSP),*

*SGT University, Gurugram 122505, Delhi-NCR, Haryana, India*

*(Former) Dean, Faculty of Natural Sciences &*

*Director, Centre for Theoretical Physics,*

*Jamia Millia Islamia, New Delhi 110025, India*

Contacts: Email: [samijamia@gmail.com](mailto:samijamia@gmail.com)

Mobile: +91-9990840273, 9821103323

Wikipedia: [https://en.wikipedia.org/wiki/Mohammad\\_Sami\\_\(professor\)](https://en.wikipedia.org/wiki/Mohammad_Sami_(professor))



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## Personal Details:

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| Father's Name:        | Bashir Ahmad   |
| Date of Birth:        | 5 <sup>th</sup> February 1955                                    |
| Marital Status:       | Married  |
| Residential Address:  | C-153, Sector-44, NOIDA, Gautam Budh Nagar, Uttar Pradesh, India |
| Language Proficiency: | English, Russian, Hindi, Urdu                                    |

## Academic Qualifications:

- Moscow State University Moscow, Ph.D. "Higgs Boson Production in lepton-lepton and hadron-hadron Collisions" (1983).
- People's Friendship University, Moscow, M. Sc Physics, in Theoretical Physics, 1973 to 1978.
- People's Friendship University, Moscow, Research Associate, Worked on the Construction of Measures in Functional Spaces, July 1978 to 1979.

## Academic Employment:

- Pool Officer, Dept. of Physics, University of Pune, India, 1983 to 1985
- Lecturer, Dept. of Physics, Jamia Millia Islamia, New Delhi, India, 1985 to 1994
- Reader, Dept. of Physics, Jamia Millia Islamia, New Delhi, India, 1994 to 2006
- Visiting Scientist at IUCAA, Pune, India, 2002 to 2005
- Professor, Centre for Theoretical Physics, Jamia Millia Islamia, New Delhi, India, Nov 28, 2006 - Feb 29, 2020.
- Distinguished Professor, International Centre of Cosmology, Charotar University of Science & Technology (CHARUSAT), Changa, Taluka: Petlad, Dist: Anand, Gujarat 388421.
- Professor (Foreign Expert) in Eurasian National University, Nur Sultan, Kazakhstan

## Administrative Responsibilities:

- Director, Centre for Cosmology and Science Popularization (CCSP), SGT University, Gurugram 12006, India

- Dean, Faculty of Natural Sciences, Jamia Millia Islamia, April 2018- Feb 4, 2020.
- Director, Centre for Theoretical Physics, Jamia Millia Islamia, New Delhi, January 12, 2007 –Jan 30, 2020.

### **Awards & Fellowships:**

- **Hon’ble President of India Visitor’s award for path breaking research in Cosmology and Astrophysics, 2015**
- ICTP Senior Associateship from 2006 to 2013
- Fellow of Indian Academy of Science (FASc)
- Fellow of National Academy of Science (FNASc)
- JSPS fellowship (short term), 2007
- JSPS fellowship (long term), 2012
- IUCAA Visiting Scientist from 2002 to 2005
- Editor, International Journal of Modern Physics D (IJMPD)
- Senior Scientist Platinum Jubilee Fellowship of National Academy of Science

### **Worked in Research Groups at following institutions:**

- CERN (Geneva)
- ICTP (Italy)
- Portsmouth University (UK)
- IPMU, University of Tokyo
- KMI, University of Nagoya (Japan)
- Tokyo University of science
- IUCAA (Pune), India
- HRI, Allahabad, India and others

### **Nobel citation:**

- “**Dynamics of dark energy**”, Edmund J. Copeland, **M. Sami**, Shinji Tsujikawa: [arXiv:hep-th/0603057](https://arxiv.org/abs/hep-th/0603057) is cited by the Nobel committee document, 2011, on accelerating universe.

### **Membership of Academic Bodies:**

- Vice President of **BRICS Association of Gravity, Astrophysics and Cosmology**, China
- Vice President of **Association of Asia Pacific Physical Societies (AAPS)**
- Member, Governing Council, IUCAA, Pune, India 2009 – 2012
- Council Member IAGR

### **National & International Projects:**

- “Particle Physics Models of Inflation and Dark Energy and Their Observational Constraints”, **DST, India – JSPS, Japan (June 1, 2007 – May 31, 2009)**
- “Towards Understanding the Origin of Dark Energy, Dark Matter and Inflation”, **DST, India –JSPS, Japan (June 30, 2009 – June 29, 2011)**
- “Brane World Cosmology with Quintessence, Phantom Fields Dark Matter and Dark

Energy, effectively described by Non-linear Sigma Models”, DST, India – RFBR, Russia (September 25, 2008 – September 24, 2010)

- “Models of Dark Energy: Theory and Observations”, DST, India (February 8, 2010 – February 7, 2013)
- “Inflation and Late Time Acceleration of the Universe and its Observational Signatures”, DST, India - RFBR, Russia (March 1, 2018 – February 29, 2020)

### **Memorial Lectures:**

- P C Mahanta Memorial Lectures, delivered in 2011 at Guwahati University, Assam, India.
- Vaidya – Roychoudhury endowment award lecture, delivered in January 2014 at Nagpur.

### **Conferences / Workshops Organized / International Advisory Committee:**

- Recent Advances in High Energy Physics and Cosmology, held at the Department of Physics, Jamia Millia University, New Delhi, 2000.
- Symposium in High Energy Physics and Cosmology, held at the Department of Physics, Jamia Millia University, New Delhi, 2001.
- Workshop on Strings and Cosmology, IUCAA, Pune, 2004.
- IAGR24, held at the Centre for Theoretical Physics, Jamia Millia from 5-8 February, 2006.
- Two-days meeting on “Prospects and Problems in Gravitation and Cosmology” held at the Centre for Theoretical Physics, Jamia Millia Islamia from 29-30 January, 2008.
- Member Scientific Advisory Committee of BRICS Association of Gravity, Astrophysics and Cosmology in the First Symposium on Gravity, Astrophysics and Cosmology (BRICS - AGAC) held at Yangzhou University, China, October 18-20, 2017.
- Member Scientific Advisory Committee of BRICS Association of Gravity, Astrophysics and Cosmology in the Second Symposium on Gravity, Astrophysics and Cosmology (BRICS - AGAC) to be held at University of KwaZulu Natal, South Africa during October 22-28, 2018.

### **My Reviews:**

- Late-time cosmic acceleration: ABCD of dark energy and modified theories of gravity
- Unification of inflation and dark energy a la quintessential inflation
- Why is Universe so dark?
- A primer on problems and prospects of dark energy
- Dark energy and possible alternatives
- Dynamics of dark energy
- Models of Dark Energy
- Unifying Brane World Inflation with Quintessence

### **Publications:**

- Number of publications - 90 Plus

- Citations - Above 12,000

### **Collaborations:**

A. Starobinsky, N. Dadhich, V. Sahni, T. Padmanabhan, B. C. Paul, A. A. Majumdar, A. Mofazzal, S. Panda, R. Maartens, J. E. Lidsey, J-F, Dufaux, Shinji Tsujikawa, M. R. Garousi, E. J. Copeland, T. Shiromizu, Shin'ich Nojiri, S. D. Odintsov, G. Calcagni, John Ward, L. Amendolla

### **Recent Invited Talks and Seminars:**

- Invited talks on "Dark Energy Models" in the Third Aegean Summer School held in Greece from September 26 to October 2, 2005.
- Invited talk in the workshop on Brane Worlds held in Portsmouth from 18 September to 30 September, 2006.
- Invited talk on "Cosmological relevance of scaling solutions", delivered at Titech, Japan on June 28, 2007.
- Invited talk on "Dark Energy" delivered at Deptt. Of Physics, University of Nagoya, Japan on 7<sup>th</sup> May, 2008.
- Invited talk on "Dark Energy" at 'DAE High Energy Physics Symposium' held at Banaras Hindu University in October 2008
- Invited talk on "Dark Energy: What could it be?" at IPMU international conference on darkenergy, Japan from June 22 to June 26, 2009
- Invited talk on "Dark Energy and its possible alternatives" on First IUCAA Reunion Meeting– 2009 on Gravitation and Astronomy: Frontiers in Theory and Observation from August 11 - 14, 2009, at IUCAA, Pune.
- Invited talk on "Understanding the cosmic acceleration" on 17<sup>th</sup> September, 2009 at HRI, Allahabad.
- Invited talk on "Cosmic acceleration: Dark energy and Modified theories of gravity" Kobayashi Maskawa Institute, Nagoya University, Japan, June 01, 2012
- Invited talk on "Cosmological constant and beyond" Tokyo University of Science, December 16, 2012
- Invited talk on "Late time cosmic acceleration: Dark energy and alternatives" 3rd International Workshop on Dark Matter, Dark Energy and Matter-Antimatter Asymmetry, Taiwan, December 28, 2012.
- Invited talk on "cosmic acceleration: dark energy and alternatives" in the conference Astrophysics, gravitation and cosmology, Astana, Kazakhstan, October 8-10, 2014
- Invited talk on "scalar field and naturalness", National centre for theoretical sciences, NTHU, Taiwan, November 5-22, 2014
- Invited talk "Late time cosmic acceleration: Dark energy and alternatives", 2015 Annual Meeting of Chinese Physical Society, Division of Gravitation and Relativistic Astrophysics, Hangzhou, China, 21-26 June 2015.
- Invited talk "Quintessential inflation", in first symposium of the BRICS Association of Gravity Astrophysics and Cosmology 2017, Yangzhou University, China, 18-20 October 2017.
- Invited talk "Unification of inflation and late time acceleration" , in 3<sup>rd</sup> International

Winter School Seminar on gravity, cosmology and astrophysics, Petrov School, Kazan University, Russia, 23 November – 3 December 2017.

- Invited talk “Quintessential inflation -- Relic gravity waves”, in a Workshop on “Gravity and Cosmology 2018” at Kyoto University, Japan, during February 4 - April 6, 2018.
- Invited talk “Joining the two ends: model building requirements and implications”, in the Third Symposium of the **BRICS Association on Gravity, Astrophysics and Cosmology** at Kazan Federal University, Kazan, Russia during August, 29 – September, 3, 2019.

### **Subjects Taught:**

- Classical Mechanics
- Classical & Quantum Field Theory
- Quantum Mechanics
- Statistical Mechanics
- Gravitation & Cosmology

### **Research Interests:**

- Dynamics of early Universe: Phase transitions, primordial black holes and baryogenesis.
- Models of dark energy, quintessential inflation and relic gravity waves.
- Cosmological Perturbations.
- Reheating mechanisms.

### **Referees:**

- Prof. A. Starobinsky (**The Kavli Prize 2014**), Professor, Landau Institute for Theoretical Physics of the Russian Academy of Sciences, Moscow, Russia, email: [alstar@landau.ac.ru](mailto:alstar@landau.ac.ru)
- Prof. Shin'ichi Nojiri, KMI, Nagoya University, Japan, email: [nojiri@gravity.phys.nagoya-u.ac.jp](mailto:nojiri@gravity.phys.nagoya-u.ac.jp)
- Prof. Roy Maartens, Institute of Cosmology and Gravitation University of Portsmouth, Portsmouth, UK email: [roy.maartens@port.ac.uk](mailto:roy.maartens@port.ac.uk)
- Prof. Sameer D. Mathur, Department of Physics, The Ohio State University, Columbus, OH43210, USA, email: [mathur.16@osu.edu](mailto:mathur.16@osu.edu)