EVALUATIVE REPORT OF CENTRE FOR THEORETICAL PHYSICS

1. Name of the Department: **Center for Theoretical Physics**
2. Year of establishment **2006**
3. Is the Department part of a School/Faculty of the university? : No, Centre of Jamia Millia Islamia
4. Names of Programmes / Courses offered (UG, PG, M.Phil, Ph.D., Integrated Masters; Integrated Ph.D., etc.): Ph.D.

S. No.	Name of the Programme / Courses offered	Type
1	Ph.D.	Regular

5. Interdisciplinary courses and departments involved: NA
6. Courses in collaboration with other universities, industries, foreign institutions, etc. NA
7. Details of programmes / courses discontinued, if any, with reasons: NA
8. Examination System: NA

S. No.	Name of the	Examination System
1	Ph.D.	Semester Based Credit System

9. Participation of the department in the courses offered by other departments

S. No.	Name of the Programme
1.	M. Sc. (Physics)
2.	B. Tech.
3.	Diploma in Engineering (Jamia Polytechnic)

10. Number of teaching posts sanctioned and filled (Professors/Associate Professors/Asst. Professors)

S. No.	Teaching Post	Sanctioned	Filled	Actual
1.	Professor	02	02	02
2.	Associate Professors	02	02	03*
3.	Assistant Professors	01	01	01

* One transferred from Physics Department

11. Faculty profile with name, qualification, designation and specialization (D.Sc./D.Litt./ Ph.D./ M.Phil., etc.)

S. No.	Name	Qualification	Designation	Specialization	No. of Years of Experience	Ph.D students guided for the last 4 years	
						Awarded	In Progress
1	M. Sami	Ph.D.	Professor	String inspired cosmology, Dark energy, Inflation	29	03	03
2	Sushant Ghosh	Ph.D.	Professor	Black Holes, Gravitational Collapse	22	Nil	03
3	Sanjay Jhingan	Ph.D.	Professor	Classical General Relativity, Gravitational waves, Astrophysics, Cosmology	14	01	03
4	Anjan Ananda Sen	Ph.D.	Professor	Gravitation, Astroparticle physics, Cosmology	13	02	03
5	Tabish Qureshi	Ph.D.	Professor	Foundation of Quantum Mechanics, Entanglement	19	01	01
6	Rathin Adhikari	Ph.D.	Asst. Professor	Neutrino Physics, Beyond Standard Model- Supersymmetry, Astroparticle Physics	19	01	01

12. List of senior Visiting Fellows, faculty, adjunct faculty, emeritus professors

S. No.	Name	Qualification	Designation & Duration	Specialization
1	Naresh Dadhich	Ph.D.	M. A. Ansari Research Chair Professor, 2012	Classical & Quantum General Relativity, Braneworld Cosmologies, Wormholes
2	Vikram Soni	Ph.D.	UGC Professor, 2012	Neutron Stars, Magnetars
3	Afsar Abbas	Ph.D.	Visiting Fellow, 2007-2008	Nuclear Physics
4	Sudhendu Rai Chowdhury	Ph.D.	DST Ramanna Fellow 2007-2009	High Energy Physics
5	Q N Usmani	Ph. D.		Excited nuclei, nuclear interactions, nuclear matter, quantum liquids
6	Sonal Desai	Ph.D.		Quantum Gravity and Cosmology

13. Percentage of classes taken by temporary faculty – programme-wise information: Nil

14. Programme-wise Student Teacher Ratio: 5:2 (for PhD. Courses)

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual.

S. No.	Post	Sanctioned	Filled	Actual
1.	Academic support staff (technical)	2	2	2
2.	Administrative staff	1	1	1

16. Research thrust areas recognized by funding agencies
Gravitation, Astrophysics, Cosmology, High Energy Physics, Astro-particle Physics and Quantum Information.

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies and grants received project-wise.

S. No.	National / International	Project Title & Duration	Name of Funding agency	Principal Investigator	Grants received in Rupees
1.	National	Probing Black Hole Environment with X-Ray Binaries (2014-2016)	ISRO	Sanjay Jhingan	17,05,000

2.	National	Black Holes and visible similarities	UGC-Minor Research Projec	Sanjay Jhingan	2,00,000
3.	National (Completed)	Models of Dark Energy: Theory and Observations (2010-2013)	Department Of Science and Technology	M. Sami	17,75,600
4.	National (Completed)	Black holes, naked singularities and their formation from gravitational collapse in modified gravity (2011-2014)	University Grants Commission	S.G. Ghosh	12,43,880
5.	National (Completed)	Astrophysics and Cosmology with Higher Dimensional Theories (2010-2013)	Department Of Science and Technology	Anjan A. Sen	27,14,000
6.	National (Completed)	Accelerating Universe and its Observational Signatures (2008-2011)	University Grants Commission	Anjan A. Sen	5,45,000
7.	International (Completed)	Particle physics models of inflation and dark energy and their observational constraints (2007-2009)	DST, India & JSPS, Japan	M. Sami	3,30,000
8.	International (Completed)	Towards Understanding the Origin of Dark Energy, dark matter and Inflation (2009-2011)	DST, India & JSPS, Japan	M. Sami	3,94,000
9.	International (Completed)	Brane World Cosmology with Quintessence, Phantom Fields Dark Matter and Dark Energy, effectively described by Non-linear Sigma Models(2008-2010)	DST, India & Russian Foundation for Basic Research	M. Sami	4,46,820
	Total				**74,49,300**

18. Inter-institutional collaborative projects and grants received

a) All India collaboration

S. No.	National	Collaborative Project	Name of Funding agency	Principal Investigator	Grants received
1.	National	Associate-ship since 2009	IUCAA, Pune	S. G. Ghosh	Air-Travel Support for Multiple Visits, DA as per rules and Free guest house
2.	National	Associate ship since 2007	IUCAA, Pune	Anjan A. Sen	Air-Travel Support for Multiple Visits, DA as per rules and Free guest house
3.	National	Associate ship since 2007	IUCAA, Pune	Sanjay Jhingan	Air-Travel Support for Multiple Visits, DA as per rules and Free guest house

b) International

S. No.	International	Collaborative Project	Name of Funding agency	Principal Invest-igator	Grants received
1.	International	Particle physics models of inflation and dark energy and their observational constraints (2007-2009)	DST, India & JSPS, Japan	M. Sami	3,30,000
2.	International	Towards Understanding the Origin of Dark Energy, dark matter and Inflation (2009-2011)	DST, India & JSPS, Japan	M. Sami	3,94,000
3.	International	Brane World Cosmology with Quintessence, Phantom Fields Dark Matter and Dark Energy effectively described by Non-linear Sigma Models	DST, India & Russian Foundation for Basic Research	M. Sami	4,46,820

4.	International	Research Collaboration With UKZN	University of Kwa-Zulu, Natal Durban, South	S.G. Ghosh	Air-Travel Support for Multiple Africa Visits, local expenses and Free
5.	International	Honorary Research Professor (2013-16)	University of Kwa-Zulu, Natal Durban, South Africa	S.G. Ghosh	Air-Travel Support for Multiple Visits, local expenses and Free guest
6.	International	Regular Associate 2008-2016	ICTP, Trieste, Italy	Anjan A. Sen	Full support including Air Fare
7.	International	Research Associate-Ship May- June 2011	Rikkyo University Tokyo, Japan	Sanjay Jhingan	Full support including Air Fare

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, etc.;
Total grants received. : NA

20. Research facility / centre with: NA
- State recognition
- National recognition
- International recognition

21. Special research laboratories sponsored by / created by industry or
Corporate bodies: NA

22. Publications by Faculties:
Research Publications of the Department

S. No.	Item	Total Numbers
1	Number of papers published in peer reviewed journals (national / international)	129
2	Number of papers published in conferences	-

3	Monographs	-
4	Chapters in Books	Original article by R. Adhikari & G Rajasekaran in the Book -Seventy Years Of Double Beta Decay: From Nuclear Physics to Beyond-Standard-Model Particle Physics Edited by Hans Volker Klapdor- Kleingrothaus World Scientific, 30-May-2010.
5	Edited Books	-
6	Laboratory Manuals	-
7	Articles in Magazines	
8	Editorials	
9	Books with ISBN with details of publishers	
10	Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.)	129
11	Citation Index – range / average	Range 0-58, Average : 10.48
12	SNIP	Mentioned in publication list
13	SJR	Mentioned in publication list
14	Impact Factor – range / average	Range -1.333-5.831, Average-3.697
15	h-index	08-32

S. No.	Faculty Name	No. of Research Papers	h-index (source Google scholar)
1	M. Sami	77	32
2	S. G. Ghosh	51	14
3	Sanjay Jhingan	38	17
4	Anjan A. Sen	70	26
5	Tabish Qureshi	29	08
6	Rathin Adhikari	28	11

Please see Annexure - ERD I: Publications

23. Details of patents and income generated: NA

24. Areas of consultancy and income generated: NA

25. Faculty selected nationally/ internationally to visit other laboratories in India and abroad

S. No.	Name	Place of visit	Year
1	M. Sami	Astrophysics, gravitation and cosmology, Astana,Kazakhstan	2014
2		National centre for theoretical sciences, NTHU, Taiwan	2014
3		PRL, Ahmedabad	2014
4		Internatinal centre for theoretical physics, Eurasian university, Kazakhstan	2014
5		ICTP, Trieste	2013
6		CERN, Geneva	2013
7		Eurasian International Center for Theoretical Physics, Stana, Kazakhstan	2013
8		avli Institute for the Physics and Mathematics of the Universe, Kashiwa, Japan.	2013
9		Deptt of physics, University of Guwahti, Guwahati	2011
10		IIT, Roorkee	2011
11		University of Guwahti	2011
12		Kobayashi-Maskawa Institute, Nagoya University, Nagoya, Japan	2012-13
13		IEEC Weekly Colloquium, Barcelona, Spain	2010
14		Winter school on gravitation and cosmology	2010
15		ICTP, ITALY	2010
16		HRI, Allahabad	2009
17		IUCAA Reunion Meeting	2009
18		Kolkata University	2009
1	Sushant G. Ghosh	IUCAA Pune	2015
2		Institute of Nuclear Physics of Republic Uzbekistan AS, Tashkent, Uzbekistan	2014
3		Ulugh Beg Astronomical Institute , Tashkent, Uzbekistan	2014
4		Unversity of KwaZulu-Natal, Durban, South Africa	2014
5		Unversity of the Western Cape, Cape Town, South Africa	2014
6		GWPAW @IUCAA, Pune, PUNE, INDIA	2013
7		Ulugh Beg Astronomical Institute , Tashkent,	2013
8		Institute of Nuclear Physics, Tashkent, Uzbekistan	2013
9		Rhodes University, Grahamstown, South Africa	2013

10		Conference in honour of Prof GL Nongxa, University of Forte Hare, Alice, South Africa	2013
11		University of Kwa-Zulu-Natal, Durban, South Africa	2013
12		SAGS 2013, , at Salt-Rock, Balito, Durban, South Africa	2013
13		Meeting: Jayan@75 at IUCAA Pune Chaired Session, Pune, India	2013
14		IUCAA, Pune	2012
15		ASSOCIATE-FEST AT IUCAA, Pune	2012
16		Durban University of Technology, Durban, Durban, South Africa	2012
17		University of Zululand, Kwadalegwa, South Africa	2012
18		SDEA2012 at WITS University, Johannesburg, South Africa	2012
19		University of Kwa-Zulu-Natal, Durban, Durban, South Africa	2012
20		ICGC-2011 Goa	2011
21		BITS, Pilani - Dubai campus, UAE	2011
22		Chandrayana 2011 conference at IMSc, Chennai	2011
23		IRC Coordinaters' meeting at IUCAA, Pune	2011
24		Institute of Mathematical Sciences, Chennai	2011
25		IUCAA, Pune	2010
1	Sanjay Jhingan	University of Kwa-Zulu-Natal, Durban, South Africa	2012
2		Gravitational Wave Astronomy in Africa, Pretoria, South Africa	2012
3		International Center for Theoretical Sciences, TIFR, Mumbai	2010
4		IUCAA, Pune	2010
5		Institute for Physics and Mathematics of the Universe, Tokyo, Japan	2010
6		IUCAA, Pune	2010
7		Yukawa Institute for Theoretical Physics, Kyoto Japan	2007
8		IUCAA, Pune	2007
9		TIFR Mumbai	2007
10		Department of Theoretical Physics, Univ. Of Basque Country, Bilbao Spain	2007
11		IUCAA, Pune	2008
12		Indo U.S. Science and Technology Forum	2009

13		Tokyo University of Science, Tokyo, Japan	2009
14		Department of Physics, Nagoya University, Nagoya, Japan	2010
15		Yukawa Institute for Theoretical Physics, Kyoto, Japan	2010
16		Department of Physics, Kyoto University, Kyoto, Japan	2010
17		Academic Staff College Shimla	2010
18		TIFR Mumbai	2010
19		IUCAA, Pune	2011
20		Department of Theoretical Physics, Rikkyo University, Tokyo Japan	2011
21		Department of Physics, Kinki University, Osaka Japan	2011
22		Department of Physics, Kyoto University, Kyoto Japan	2011
23		Gravitational Waves Astronomy in Africa Pretoria, South Africa	2012
24		Univ. Kawazulu Natal Durban, South Africa	2012
1	Tabish Qureshi	Discussion Meeting on Quantum Measurements, IISc,	2014
2		Jawaharlal Nehru University, New Delhi	2014
3		Manipur University, Imphal, Manipur	2014
4		International Meet on Quantum Correlations and Logic, Language and Set Theory, IIT, Jodhpur.	2013
5		Meeting on Quantum Information Processing and Applications, HRI, Allahabad.	2013
6		8th Nalanda Dialogue on Philosophy & Science, Nalanda, Bihar.	2013
7		International Conference on Quantum Information and Quantum Computing 2013, Bangalore, India.	2013
8		HRI, Allahabad	2012
1	Rathin Adhikari	University of California, Riverside, USA	2013
2		California Institute of Technology (Caltech), Pasadena	2013
3		University of Cincinnati, Cincinnati, Ohio, USA	2013
4		Center for Cosmology and Astro Particle Physics	2013
5		HRI, Allahabad	2009
6		HRI, Allahabad	2012
7		Indian Association for Cultivation of Science, Kolkata	2011
8		Indian Statistical Institute, Kolkata	2011
9		SINP, Kolkata	2011
10		HRI, Allahabad	2011

11		Physical Research Laboratory, Ahmedabad	2010
12		HRI, Allahabad	2010
13		JBNSTS, Kolkata	2010
14		IIT Mumbai	2010
1	Anjan A. Sen	Abdus Salam International Center for Theoretical Physics in Trieste, Italy	2007
2		Universidad Autonoma de Barcelona, Spain	2007
3		Indian Institute of Technology, Kharagpur	2008
4		IUCAA, Pune	2008
5		CERN, Geneva, Switzerland	2009
6		Abdus Salam International Center For Theoretical Physics, Trieste, Italy	2009
7		Institute for Early Universe, Ewha Woman University Seoul, Korea,	2010
8		Korea Institute for Advanced Science (KIAS) in Seoul Korea	2010
9		Abdus Salam International Center For Theoretical Physics, Trieste,Italy	2010
10		Max-Planck Institute For Physics, Munich, Germany	2010
11		LNMIIT Institute, Jaipur	2010
12		HRI, Allahabad	2011
13		IUCAA, Pune	2011
14		CERN, Geneva, Switzerland	2011
15		Abdus Salam International Centre for Theoretical Physics at Trieste, Italy	2011
16		IISER, Mohali	2011
17		Sundarban Mahavidyalaya, Kakdiwp, West Bengal	2011
18		ICGC-2011 conference at Goa	2011
19		WHEPP-12 meeting at Mahabaleswar	2011
20		AAPCOS-2012 organized by S.I.N.P, Kolkata held at Darjeeling	2012
21		T.I.F.R. Mumbai	2012
22		E.T.H, Zurich	2012
23		Abdus Salam International Center For Theoretical Physics, Trieste, Italy	2012
24		Abdus Salam International Center For Theoretical Physics at Trieste, Italy	2013

25		University of Guwahati, Guwahati, Assam during 12-14th February 2013	2013
26		Edinburgh Delhi Particle Physics Symposium, New Delhi during 15-17 February	2013
27		Meeting of Astronomical Society of India during 20-22nd February 2013 at Trivanthapuram	2013
28		Fifth Indo-US Frontiers of Science Symposium, held at Agra, India on April 7-10,2013	2013
29		University of Warsaw, Poland during July 2013	2013
30		FTAG meeting in September 2013 at Indian Institute of technology, Gandhinagar	2013
31		University of Hyderabad, Hyderabad	2013
32		Saha Institute of Nuclear Physics, Kolkata	2014
33		Kalyani University, Kalyani, West Bengal	2014
34		Institute of Physics, Bhubaneswar	2014
35		Kavli Institute of Theoretical Physics, Beijing China	2014
36		ETH, Zurich in August 2014	2014
1	Naresh Dadhich	CERN, Geneva	2014
2		Albert Einstein Institute, Golm, Germany	2014
3		Silesia University, Opava, Czek Republic	2014
4		Synergy School, Olmouc, Czek Republic	2014
5		Al Farabi National University, Kazakhstan	2012
6		CERN, Geneva	2012
7		Conference in Prague	2012
8		University of Barcelona	2012
9		Conference in Hebron, Palestine	2012
10		National University, Thailand	2012
11		IIT Chennai	2013
12		IISER, Bhopal	2013
13		Louisiana State University, USA	2013
14		CEC, Chile	2013
15		University A Bella Santiago, Chile	2013
16		Pontifica Universidad Chile	2013
1	Vikram Soni	Kwazulu Natal University in Durban , South Africa	2014

26. Faculty serving in National Committee/International Committee/Any Other:

S. No.	Name	National Committee/International Committee/Any Other
1	M. Sami	Member, Governing Council, IUCAA, Pune, India (2009 – 2012)
2		Council Member, IAGRG
1	Sushant G. Ghosh	Member, BOS - Mathematics, Delhi Technical University, Delhi
2		Member, Doctoral Research Committee (DRC)- Mathematics, Delhi Technical University, Delhi
3		Life Member, Indian National Science Congress, Calcutta
4		Life Member, Indian Mathematical Society, New Delhi
5		Life Member, Indian Association of General Relativity and Gravitation, Pune (Council Member 2004-08).
6		Chair, ICGC, Pune, 2008
7		Peer Reviewer, National Research Foundation (NRF) (Funding Agency) , South Africa
8		Life Member, South African Gravitational Society, RSA
9		Peer review for scholarly journals:Physical Review D, General Relativity Gravitation, International Journal of Modern Physics D, International Journal of Modern Physics A, Modern Physics Letter A Pramana J Phys, Astrophysics Space Science, International Journal of Modern Physics D
1	Sanjay Jhingan	Life Member, IAGRG India
2		Workshop Chairman, Classical General Relativity And Gravitational waves. International Conference of General Relativity and Cosmology, December 2007
3		Workshop Chairman, Classical General Relativity and Gravitational waves. International Conference of General Relativity and Cosmology, December 2011
4		Peer review : PLB, JCAP, MNRAS, PRAMANA, GRG
1	Anjan A. Sen	Coordinator, Cosmology and Astroparticle Physics Working Group, at WHEPP-12 held at Mahabaleswar during 2nd-8th January 2012
2		Member, Syllabus Committee for the M.SC/M.Phil Physics Program, at Central University of Rajasthan, India
3		Convener, S.O.C. for 27th IAGRG Meeting held at Garhwal University, Srinagar during March 7-9, 2013
4		Life Member, IAGRG India
5		Peer review for scholarly journals Physics Letters B, Europhysics Letters, General Relativity and Gravitation and Pramana.

6		Member, National Organising Committee, WHEPP-XIV to be held at Indian Institute of Technology, Kanpur, India in December 2015.
7		Coordinator, Workshop on Cosmology with Large Scale Structures, held at CTP, Jamia in January2015 at CTP, JMI during 5th-9th January
8		Convenor, International Workshop on Dark Energy, held at Center For Theoretical Physics, JMI in December 2011 Physics, J.M.I, during
9		Council Member for Indian Associate for General Relativity and Gravitation (IAGRG)
10		Member, Internatioanl Science Developement Team on "Fundmental Physics and Cosmology" for Thirty Meter Telescope (TMT) project.
11		Member, Indian Science Working Group on "Epoch of Reionization and
1	Rathin Adhikari	Peer review for scholarly Journals Canadian Journal of Physics, Fizika-B (Croatian Physical Society).
1	Anjan A. Sen	Coordinator, Cosmology and Astroparticle Physics Working Group, at WHEPP-12 held at Mahabaleswar during 2nd-8th January 2012
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9		Council Member for Indian Associate for General Relativity and Gravitation (IAGRG)
10		Member, Internatioanl Science Developement Team on "Fundmental Physics and Cosmology" for Thirty Meter Telescope (TMT) project.

27. Faculty recharging strategies

Please see Annexure – ERD II: Faculty Recharging Strategies

28. Student projects
    - Percentage of students who have done in-house projects including inter-departmental projects
    - Percentage of students doing projects in collaboration with other universities / Industry / institute

S. No.	Type of Project	Percentage
1.	In-house/Interdepartmental	78.94
2.	Other universities/industry/institute	78.94

29. Awards / recognitions received at the national and international level by faculty/post doc/students:

S. No.	Category	Name	Awards / recognitions	Type
1.	Faculty	M. Sami	F. A. Sc, Indian Academy of Science, 2009	National
2.			F. N. A. Sc, National Academy of Science, 2009	National
3.			Governing Council, IUCAA, Pune, 2009	National
4.			JSPS fellowship for a period from 2007 " 2008	International
5.			JSPS fellowship for a period from 2012-2013	International
6.			ICTP Senior Associateship from 2006 to 2011.	International
7.	Faculty	Sushant Ghosh	Associate Since 1998, Inter-University Centre for Astronomy & Astrophysics, Pune.	National
8.			Honorary Professor, College of Agriculture, Engineering & Science, University of Kwazulu-Natal, South Africa from 2013 – 2016.	International
9.	Faculty	Sanjay Jhingan	Associate, Inter-University Centre for Astronomy & Astrophysics, Pune.	National
10.	Faculty	Anjan a. Sen	Associate, Inter-University Centre for Astronomy & Astrophysics, Pune.	National

11.	Faculty	Sanjay Jhingan	Nominated by Indian National Science Academy for Third IAP Conference of Young scientists to be held in Conjunctions with the World Economic Forum Annual Meeting of the New Champions in Tianjin, China (2010).	International
12.			Research Associate, Center for International Studies, Rikkyo University, Tokyo, Japan (May-June 2011)	International
13.	Faculty	Anjan A. Sen	Regular Associate, Abdus Salam International Centre For Theoretical Physics, Trieste,	International

30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any.

S. No.	Title of seminars	Funded by
1.	Indo-Japan Workshop on Gravitation & Cosmology, 29-30 December, 2009	DST
2.	Indo-Japan Workshop on Gravitation & Cosmology, December, 2008	DST
3.	Indo-Japan Workshop on Gravitation & Cosmology, December, 2007	DST
4.	IUCAA School On Gravitation And Astrophysics, CTP-JMI	IUCAA
5.	Indo – Japan workshop on gravitation and cosmology, 2011	DST-JSPS
6.	IAGRG Meeting February 2007	JMI, IUCAA, IAGRG
7.	IndIGO – ACIGA meeting on LIGO-Australia, CTP-JMI	IndIGO & DST
8.	VIII FTAG Meeting at HNB Garwhal University, Srinagar, Uttarkhand, Apr 2010	IUCAA, HRI, IMSC, SINP, JMI
9.	International Workshop on Dark Energy at CTP, JMI	SINP, IIA, IUCAA, HRI, JMI
10.	XXVI SERC Main School on THEP, at CTP, JMI, Feb. 2011	SERC-DST

11.	HEPCOS-Advances in High Energy PhysicsAnd Cosmology, March 2008	JMI
12.	V.V. Narlikar Memorial Lecture, 2009	JMI
13.	V.V. Narlikar Memorial Lecture, 2010	JMI
14.	V.V. Narlikar Memorial Lecture, 2011	JMI
15.	Faculties Physics & Cosmology, September 2007	JMI
16.	Prospects and problems in Gravitation and Cosmology, January 2008	JMI
17.	Symposium on Astro-Particle and Nuclear Physics	JMI
18.	Some Aspects of Theoretical Physics	JMI
19.	International Conference on Matters of Gravity and the Universe October 2014	JMI, IUCAA, IOP
20.	Workshop on cosmology and large scale structure January 2015	IUCAA

31. Code of ethics for research followed by the departments

The CTP members always write research paper after proper survey of existing knowledge, truth, and avoid the errors and duplication of any work.

Since most of the research done is collaborative in nature involving different people in different institutions, ethical issues such as trust, accountability, mutual respect, and fairness is observed. The CTP researchers always properly cite the work which they use in their work.

The CTP researchers always acknowledge discussions with other scientists, parent institute for granting leaves, host institutes for facility and also the funding agencies. CTP members strive hard for honesty in all scientific communications/ lectures.

The CTP members honor copyrights and intellectual property right and avoid using unpublished data, methods, or results without permission.

Most of the research papers are put on the arXiv (http://arXiv.org: a fully automated electronic archive and distribution server for research papers, hosted at the Los Alamos National Laboratory, USA) before submission to Journal. The arXiv has its own software which checks for plagiarism. The world-wide user of

The arXiv gives their comments & criticism. The papers are revised based on these comments after giving due credit to papers which were missed & then are submitted to Journals.

The PhD course work for research student includes a course of " Research Methodology" where topics like " Ethics in research and publishing", "Plagiarism" are included to make the PhD students aware of these issues.

32. Student profile course-wise:

S. No.	Name of the Course (refer to question no. 4)	Applications received	Selected		Pass percentage	
			Male	Female	Male	Female
1.	Ph.D.	151 (till 2014)	21	10	100	100

33. Diversity of students

S.No.	Name of the Course (refer to question no. 4)	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
1.	Ph.D.	53.33	6.66	33.33	6.66

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

S. No.	Name	Exam	Year
1.	Md. Wali Hossain	NET	2009
2.	Sumit Kumar	NET	2009
4.	Remya Nair	NET	2009
5.	Arnab Dasgupta	NET	2009
6.	Mohd. Shahalam	NET	2011
7.	Mohd. Shahalam	GATE	2010
8.	Bikash Ranjan Dinda	NET	2012
9.	Safia Ahmad	INSPIRE	2012
10.	Muhammad Amir	Maulana Azad	2012
11.	Abhishek Parida	NET	2013

35. Student progression

S. No.	Student progression	Percentage against enrolled
1.	UG to PG	NA
2.	PG to M.Phil	NA
3.	PG to Ph.D.	NA
4.	Ph.D. to Post-Doctoral	85 (6/7)
5.	Post-Doctoral to Employment	100

6.	Employed • Campus selection • Other than campus recruitment	NA
7.	Entrepreneurs	NA

36. Diversity of staff

S. No.	Percentage of faculty who are graduates	
1.	of the same university	Nil
2.	from other universities within the State	16.66
3.	from universities from other States	66.66
4.	from universities outside the country	16.66

37. Number of faculty who were awarded Ph.D., D.Sc. and D.Litt. during the assessment period: N/A

(All faculties in the CTP had Ph.D. degree at the time of joining)

38. Present details of infrastructural facilities with regard to

S. No.	Category	Facility
1.	Library	876 Books
2.	Internet facilities	The Centre is well equipped with Wi-Fi connection & with Jamia Internet Server. Staff and students have fast broadband internet connections
3.	Class Rooms/Seminar room with ICT facility	01
4.	Students' laboratories	01
5.	Research laboratories	NA

39. List of doctoral, post-doctoral students and Research Associates

Please see Annexure - ERD III: List of Doctoral, Post-Doctoral Students and Research Associates etc.

40. Number of post graduate students getting financial assistance from the University. NA

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology. NA

42. Does the department obtain feedback from

a. Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?: No

b. Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?: No

c. Alumni and employers on the programmes offered and how does the department tilize the feedback?: No

43. List the distinguished alumni of the department (maximum 10)

S. No.	Name	Present Affiliation
1.	Prof. S. Rai Choudhari	Professor at IISER, Bhopal
2.	Dr. Somasri Sen	Assistant Professor, Dept. of Physics, Jamia Millia Islamia, New Delhi.
3.	Dr. Hemwati Nandan	Assistant Professor, Dept. of Physics, Gurukul Kangri University, Haridwar
4.	Dr. Itzadah Thongkool	Post Doctoral Fellow, HRI, Allahabad
5.	Dr. Ronidkumar Chingangbam	Post Doctoral Fellow, Institute for Fundamental Study, Naresuan University, Thailand
6.	Dr. Amna Ali	Post Doctoral Fellow, SINP, Kolkata
7.	Dr. N. Chandrachani	Post-Doc at National Observatory, Brazil
8.	Dr. Gaveshna Gupta	Post Doctoral Fellow, PRL, Ahmedabad
9.	Dr. Nidhi Joshi	Post Doctoral Fellow, IUCAA, Pune

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

Please see Annexure - ERD IV: Details of Student Enrichment Programmes

45. List the teaching methods adopted by the faculty for different programmes.

CTP provides a graduate program (Ph.D. programme) of JMI. Students will be enrolled in a PhD program as per JMI rules. The CTP students must complete 2- semester rigorous course (GRADUATE-SCHOOL) work before pursuing research work. Teaching methods include classic blackboard lectures, discussions, presentations by student, tutorials, familiarity with computer software, series of lectures by eminent scientists and guest speakers from research institutes. The curriculum has been designed at par with Research Institutes. The graduate program teaching combines conceptual and applied concepts, observational support for models, research methodology which are integrated in the classroom, with home work which provides an opportunity for learning from and interacting with fellow classmates. The students are encouraged to attend the specialised training courses (like SERC schools), workshops, conferences and seminars to further enhance their knowledge and also keep up date with latest research in their fields.

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

The main objective of the CTP PhD programme is to ensure that a PhD holder in theoretical physics is provided with systematic understanding of theoretical physics, able to perform original scientific research, demonstrate academic leadership, increasing independence, creativity and innovation in the field of theoretical physics to comply with international scientific standards. The Ph.D. Program of CTP is framed to facilitate a plan of study which focuses on a well- defined area for focusing research in the theoretical physics. A Coordinator of the Ph.D. Program, appointed by the DIRECTOR-CTP, is responsible for ensuring that the program objectives are met within the guidelines of the JMI. He is responsible for monitoring the academic activities of graduate school and ensures that academic standards are met. Four courses per semester alongside annotated

Bibliography is required of all students for completion of graduate school (Ph.D. course work); each student is expected to consult her/his supervisor to ensure he submits annotated bibliography. The students are also given assignments / tutorials by the faculty to assess student knowledge of courses as well as identify writing strengths and weaknesses. The faculty evaluates the assignments and students are given feedback from these individual assignments in their courses. Further, informal faculty meeting, overall patterns from the student's performance are discussed. The students performance has to go through the continuously evaluation credit based system of JMI to clear graduate school.

After successful completion of the graduate school, the Research scholar starts working on the research problem. The students are continuously monitored and are asked to submit six monthly reports on their research work duly supported by their supervisor to the coordinator, Ph.D. Programme. The coordinator also conducts fortnight seminar by the research scholar which attended by all faculty and students to monitor the progress of the research by scholar.

47. Highlight the participation of students and faculty in extension activities.

Please see Annexure - ERD V: Participation of students and faculty in Extension Activities

48. Give details of "beyond syllabus scholarly activities" of the department.

S. No.	Name of Student	beyond syllabus scholarly activities
1	Ms. Nidhi Joshi	CTP research scholar invited to Summer School in Cosmology at ICTP, ITALY from 19-31 July 2010, Kavli Institute of cosmology at Cambridge, U.K. in July 2010, Institute for Astronomy, University of Edinburgh, U.K. in July 2010 TALKS DELIVERED AT Institute for Astronomy, University of Edinburgh, U.K. Summer School in Cosmology at ICTP, Italy. She received full

2	Ms. Gaveshna Gupta and Ms. Ningombam Chandrachani Devi	Invited to International Centre for Theoretical Physics (ICTP), Trieste, Italy from 25 May– 13 June 2009 with full financial support.
3	Ms. Zini Rahman	Invited to International Centre for Theoretical Physics (ICTP), Rahman Trieste, Italy from 25 May– 13 June 2009 with full financial support
4	Ms. Ningombam Chandrachani Devi	Recently, she was invited to visit the University of Sussex, Brighton, UK from 9-11 July 2012 where she gave a talk on the topic "Constraining Thawing Dark energy using Galaxy number counts". She also got the chance to present her work in the University College London London, UK from 12-14 July 2012. From 15 July -3 August 2012 she was in ICTP, Trieste, Italy attending a School on cosmology (16-27 July) where she has presented a poster on the topic "Constraining Thawing Darkv energy using Galaxy number counts" and also attended a workshop on Large Scale structure (30 july-3August).
5	Ms. Gaveshna Gupta	Invited to visit two institutes in the month of July August 2012. Firstly, she visited Institute of Theoretical Physics at Heidelberg, Germany. There she presented a talk on her latest work and had discussion with Prof. Luca Amendola. After that she visited The Abdus Salam International Center for Theoretical Physics. Where she attended the "Summer School on Cosmology" and Workshop on "Large Scale Structures". She also presented a poster titled "Constraining Thawing Quintessence" in the Summer School.
6	Ms. Remya Nair	A junior research fellow at CTP, working in the area of cosmic acceleration. For the past few months she is learning statistical techniques to get information regarding the nature of this acceleration from cosmological data. She was invited by Professor Ruth Durrer in the Department of Physics, University of Genevac Switzerland, from 9 – 13 July for academic collaboration, and she gave a talk in the department on 12 July titled 'Probing cosmic acceleration with the cosmic distance- duality relation'. There she also got a chance to discuss her work with Professor Martin Kunz who is a leading expert in Cosmology. Later she attended the Summer school on Cosmology at the International Center for Theoretical Physics, ICTP Trieste in Italy from 16 July to 27

		July and also presented a poster on her work on the cosmic distance-duality in one of the poster sessions.
7	Ms. Amna Ali	Now a postdoctoral fellow at Saha Institute of Nuclear Physics, Ali Kolkata has recently submitted her thesis from CTP, JMI. She has studied various aspects of Dark Energy which is responsible for the current cosmic acceleration. Recently she was invited to visit various universities and institutes to present her work which she did during Ph.D… She visited Institute for Theoretical physics, Heidelberg University, Germany from 4-7 July, 2012 and gave a talk on the topic "The Accelerating Universe". She also visited the Laboratory of Nuclear physics and high energy (LPNHE), Paris, France from 8-10 July, 2012 and gave a talk on the topic "The Dark side of the Universe". She also presented this talk in Astrophysics observatory INAF, Torino, Italy from 11-13 July, 2012. From 14 July -3 August 2012 she was in ICTP, Trieste, Italy attending a School on cosmology (16-27 July) where she has presented a talk on the topic "Modified gravity a la Galileon: Late time cosmic acceleration and observational constraints" and attended a workshop on Large Scale structure (30 july-3 August).
8	Md. Wali Hossain	2–4 Nov, 2014 The Groupe de physique des particules, D´epartement de physique, Universit´e de Montr´eal, Canada.Talk Delivered Late time cosmic acceleration. 3 Nov, 2014 Department of Physics, McGill University, Montr´eal, Canada.Talk Delivered A unified description of inflation and dark energy. 1 Sep–1 Nov, 2014 Department of Physics and Astronomy, University of Lethbridge, Lethbridge, Canada 22–31 Aug, 2014 Department de Physique Theorique, Universit´e de Gen`eve, Geneva, Switzerland Talk Delivered Quintessential inflation in variable gravity model. 5.18–21 Aug, 2014 International Centre for Theoretical Physics, Trieste, Italy Attended Workshop on Cosmology from Baryons at High Redshift. 6.4–15 Aug, 2014 International Centre for Theoretical Physics, Trieste, Italy Attended Summer School on Cosmology.

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details. : NO

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

1. According to Wikipedia Research paper may refer to: Academic paper also called scholarly paper, which is published in academic journals and contains original research results or reviews existing results. The research papers may generate new knowledge.
2. The Centre for Theoretical Physics is engaged in research on the most current and important problems in cosmology and gravitation and its finding/ study is published in the form Research Paper. It has emerged as one of the leading groups in the country contributing on gravity, dark energy and cosmological Inflation. It has contributed highly cited research papers published in the journals of very high impact factor. Our several papers are among the top cited papers. Our work on dark energy, modified theories of gravity, quintessential inflation and black holes is well known and world class and it is duly acknowledged. The members of CTP contributed several articles in refereed international journals. These appeared in so-called high-impact- factor journals, including Physical Review D, Physics Letters B, JCAP, etc

51. Detail any five Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Strengths

- CTP visitor's program is a vibrant and vital activity. CTP welcomes roughly 25 national/international scientists each year who give specialized seminar /colloquium
- Publications in high Impact-Factor & h-index journals, which have large Citations. One of the papers is cited more 1728 times, several papers with more than 50 citations.
- Our faculty has received national and international recognitions. CTP- Director is Fellow of two Indian Science Academy, ICTP and IUCAA Associate-ship to faculty and one has been appointed as honorary research professor by University of Kwa-Zulu Natal, Durban South Africa.
- National / International Research Projects by faculty which generates funds and also advanced equipments required for research. CTP draws external support from several sources, including UGC, DST, JSPS, and IUCAA. The CTP has long-term collaboration with Japanese Scientist, Russian Scientists apart from the India Scientists in various Institutes
- CTP is one of the few centers in university sector in India which host Post doctoral fellowship. Two of its Post doctoral fellows got permanent jobs.

Weaknesses

- Infrastructural support is not comparable to other research institute although our research is par with any other research institute.
- The existing CTP computer lab needs to upgrade in big way. CTP computer labs not Computer Cluster and supporting staff to maintain this required for frontal area research. We have to depend on research institute for this purpose.
- The students still prefer Research Institutes like IUCAA, TIFR, RRI etc because of the facility and support in these places.
- Lack of space which restricts us to increase the intake of research students, post doctoral fellows as well visiting researchers.
- Need to have dedicated hostel facility to attract talent from all over India and may be from abroad because all research institutes have.

Opportunities

- Astrophysics & Astronomy is declared thrust area of research. Advanced Research Findings / Fellowship are available. The CTP has closer ties with 1. IUCAA, Pune 2. ICTP, Italy 3. UKZN, Durban, 4. CERN, Switzerland 4. Kobayashi – Maskawa Institute Nagoya, IPMU, Tokyo, Japan 5. Kazakhstan. Our faculty and students have opportunity to work in these leading institutions.
- Upcoming / Ongoing experiments at the LHC accelerator and Planck result 2013 will increase the demand and may open up new areas of particle physics research.
- Being a unique Research Center of its kind it can become a hub for research in Theoretical physics in North India.
- Develop Astronomy at popular level by increasing awareness among school children with portable Planetarium.
- Bridge gap in Indian research Institutes and University sector by producing Ph.D. students which can be placed in good universities and institutes as postdoctoral fellows and faculty members.

Challenges

- To sustain as well as enhance the quality of our research output. Increase the emphasis on existing research. To continue and strengthen our core activities. Expand into new, relevant areas of theoretical physics on the theme of CTP.
- Visitors programme on the lines of inter-university centre.
- We need to strengthen high energy physics group needed also to support gravity and cosmology as they go together now.
- To consolidate the existing facilities and fulfill the new objectives, we have to develop our infrastructural support which is comparable to other centres, only then we would be able to attract and retain good people.
- It is important that the centre gets assured funding from government agencies necessary to draw its academic calendar and execute proposed activities in this document.

52. Future plans of the department.

A. Strengthening and Expansion of the CTP research: Our small group, thanks to its excellent publications, is termed as the one of the most active groups in gravitation and cosmology in India. We shall continue to strengthen our activities in the coming years in this field. This is the area where we are on the way to excellence. This would constitute the nucleus of our activities. However, there is a scope to grow around this nucleus, say in high energy physics. In next three years, the effort would be to strengthen our activities in high energy physics keeping our nucleus in cosmology strong. We need to strengthen high energy physics group. At the same, we also need to support gravity and cosmology so that its excellence is continued. Similarly CTP has recently started research in foundations of quantum mechanics and quantum information.

B. CTP as Centre for Excellence: - The objectives of the Centre for Theoretical Physics (CTP) are to carry out quality research, to educate, and to perform service. It is meant to focus particularly on promoting explorations in theoretical physics through a program of individual and collaborative research, seminars, workshops, and conferences. CTP is enjoying considerable recognition and appreciation within the country and abroad. High level research in gravitation, cosmology and high energy physics are being conducted in a small centre in the country, ensuring contributions in various key fields. Research outputs and extensive contacts abroad testify to activities of an internationally competitive and often leading quality. In contemporary science many new developments are of an interdisciplinary nature and Theoretical Physics demonstrably often plays the role of a keystone component. These are the steps we are taking to strengthening academic activities of CTP and eventually we wish to see CTP as CENTRE FOR EXCELLENCE in theoretical physics in Jamia Millia Islamia.

C. Visitors Programme on line of Inter-University Center: - The visitors program is the back bone of CTP. In order to keep the faculty up-to-date, it is essential that we interact with the most active people working in our field of interest. The centre is benefitted by the visits of a large number of visitors from India and abroad who collaborate with the faculty of CTP and deliver lectures and talks of technical and pedagogical nature. The CTP proposes to start the Associate-ship Program for the highly motivated faculties form Indian universities and colleges. The proposed scheme is meant to support research and teaching in gravitation & astrophysics.

This will be a unique scheme and first of its kind in a university in India. It certainly opens a window of collaboration between CTP, JMI and the university sector.

D. Strengthening Core-Activities The pace of research in hot fields is fast and hence it is becomes necessary to have ongoing programs. The centre has focused meetings and schools necessary to trend the students and the faculty. We hope to have at least two such activities

every year though we cannot declare them as our annual activities.

E. Exchange Programme: CTP has established a kind of exchange programme with IUCAA, Pune. Under this programme some students of CTP has additional co supervisor from IUCAA and students spent time in IUCAA to work for their Ph.D. This needs to be strengthening further and formalized. Further, CTP should explore possibilities of students exchange with the institutes abroad like ICTP, AEI, various KAVLI centers, the one in BEIJING. Under this programme, CTP, JMI should be provide the travel and the host can take care of stay.

F. Integrated M.Sc. in Astrophysics and Space Science After we strengthen ourselves along the lines described above, we will focus for an integrated course which would be a unique course in India. Indian government has identified astrophysics as one of the thrust areas in physics and space science is under a great attention. Integrated M. Sc in Astrophysics and space science would allow our students to receive training in this area in Indian Observatories and it would certainly be an enormous contribution to Jamia.

Annexure - ERD-II : Faculty Recharging Strategies
Centre for Theoretical Physics, JMI

- Organizing Conference/Workshop / Training Programme etc.: These are intended to provide an opportunity to faculty for interaction with internationally renowned scientists. It is intended to create an academically charged and conducive environment in the Centre. Each year, CTP offers at least 4 programmes that include Short term course, workshop and conference.
- Received certificate after completion of Orientation Course in Feb-March 2009 at Academic Staff College of Jamia Millia Islamia, New Delhi.
- CTP visitor's program: *The centre also aims to initiate and sustain interaction with leading international researchers through an active visitors' program.* It not only does the influx of new ideas and invigorates the science, but the presence of so many scientists also stimulates research.
- Regular Seminars / Colloquium by Faculty in the Centre & Out Side:- The faculty are encouraged to give seminar on their research work and also try to deliver seminars in the other universities / institutes. This helps them to get feedback on their prior to publication.
- Encouraged to publish papers in the good journals & become highly visible in their research field.
- Encourage to apply early for research grants to build research group. It helps to get all necessary equipments & software necessary for research.

Annexure - ERD-III:

List of doctoral, post-doctoral students and Research Associates Centre for Theoretical Physics, JMI

Doctoral Students:

a) from the host university : 15
   1. Nidhi Joshi (Completed)
   2. Gaveshna Gupta (Completed)
   3. N. Chandrachani Devi (Completed)
   4. Zini Rehman (Completed)
   5. Sumit Kumar
   6. Pankaj Sheoran
   7. Remya Nair
   8. Ronidkumar Chingangbam (Completed)
   9. Safia Ahmad
   10. Muhammad Amir
   11. Mohd. Asad Siddiqui
   12. Hadia Akhtar
   13. Imtiyaz Ahmad Bhat
   14. Balendra Pratap Singh
   15. Azam Hussain

b) from other universities :12
   1. Md. Shah Alam
   2. Md. Wali Hossain
   3. Md. Shahalam
   4. Uma Papnoi
   5. Arnab Dasgupta
   6. I. Thangkool (Completed)
   7. Amna Ali (Completed)
   8. Bikash Ranjan Dinda
   9. Abhishek Parida
   10. Fazley Ahmed
   11. Abhineet Agarwal
   12. Sabir Ali

Post doctoral Students:

a) from the host university: Nil

b) from other universities: 02
   1. Somasri Sen (Completed)
   2. Hemwati Nandan(Completed)

Annexure - ERD-IV:

Details of Student Enrichment Programmes
Centre for Theoretical Physics, JMI

Organizing Conference/Workshop /Seminar/Training Programme/Scientific events are core activities of the Centre for Theoretical Physics (CTP). These are intended to provide an opportunity to students, research scholars not only in CTP, but also in the region in particular of JMI to get an exposure to the exciting fields of astrophysics, cosmology, gravitation and high energy physics. Besides the high-level training courses, workshops, conferences, seminars and regular research activities which take place throughout the year at CTP, it also offer visitor programmes. CTP visitor's program is a vibrant and vital activity of centre. CTP welcomes about 25 national/international scientists each year who give specialized seminar / colloquium and also some of the visiting scientists do collaborative research with students.

2015

1. Workshop on Cosmology with Large Scale Structures , CTP-JMI, 5-9 January 2015
2. High Scale Mixing Unification for Dirac Neutrinos
   Gauhar Abbas, Instituto de Física Corpuscular, Spain. 12th January, 2015
3. Colloquium: SQUARE KILOMETRE ARRAY: Exploring the Universe with the world's largest radio telescope
   Tirthankar Roy Choudhury, NCR-TIFR, Pune. 8th January, 2015
4. Colloquium: Probing the universe with TMT
   R. Srianand, IUCAA, Pune. 6th January, 2015

2014

5. Symposium on Astro-Particle and Nuclear Physics, CTP-JMI, 21-22 January 2014
6. International Conference on Matters of Gravity and the Universe , CTP-JMI, 27-29 October 2014
7. Towards quantum communication with more than 4 bits/photon: sending information with twisted light
   Mehul Malik, University of Vienna, Vienna, Austria. 22nd December, 2014
8. Redshifted 21-cm signal from the epoch of reionization: What is so special about the line of sight anisotropies?
   Suman Majumdar, Department of Astronomy, Stockholm University, Sweden. 19th December, 2014
9. On Electric charge and the Origin of the Universe
   Syed Afsar Abbas, Delhi. 11th December, 2014
10. Nonlinear spinor field in anisotropic cosmology: A fresh look
    Bijan Saha, Joint Institute for Nuclear Research, Dubna, Russia. 9th December, 2014
11. Colloquium: Thought Experiments in Gravitation
    Donald Lynden-Bell, Institute of Astronomy, Cambridge University. 8th December, 2014

12. De Rham-Gabadadze-Tolley Massive Gravity
    Pitayuth Wongjun, Institute for Fundamental Study, Thailand. 1st December, 2014
13. Conformal equivalence, naturalness, quintessential inflation III
    M. Sami, CTP, JMI. 27th November, 2014
14. A Peep into the Quantum World
    Tabish Qureshi, CTP, JMI. 20th November, 2014
15. Colloquium:High Precision Photometry: Applications in blazar research
    Niall Smith, Cork Institute of Technology, Ireland. 13th November, 2014
16. Renormalization group approach to Quantum Gravity
    Gaurav Narain, Institute for Fundamental Study, Thailand. 13th November, 2014
17. Talking to Neutrinos at the India-based Neutrino Observatory (INO)
    Sanjib Agarwalla, IOP Bhubaneswar. 5th November, 2014
18. On the Origin of Neutrino Mass and Experimental Searches
    Manimala Mitra, IPPP, Durham University, Durham, UK. 30th October, 2014
19. Conformal equivalence, naturalness, quintessential inflation II
    M. Sami, CTP, JMI. 21st October, 2014
20. Conformal equivalence, naturalness, quintessential inflation I
    M. Sami, CTP, JMI. 20th October, 2014
21. Quintessential inflation
    M. Sami, CTP, JMI. 21st August, 2014
22. Loop quantum cosmology: an overview and some applications
    Parampreet Singh, Louisiana State University, USA. 11th July, 2014
23. Black Hole Thermodynamics: Beyond General Relativity
    Sudipta Sarkar, IISER Mohali. 27th June, 2014
24. Unimodular Theory of Gravity and Cosmology
    Naveen K Singh, Seoul Tech., Seoul, Korea. 19th June, 2014
25. CPFS-CTP Colloquium: A brief introduction to Higgs phenomenology at LHC
    Siba Prasad Das, IOP, Bhubaneswar. 6th June, 2014
26. Neutrino Mass and Dark Matter in Light of Recent AMS-02 results
    Dilip Ghosh, IACS, Kolkata.22nd May, 2014
27. CMB driven Cosmology: the drive thus far...
    Tarun Souradeep, IUCAA, Pune. 23rd April, 2014
28. Exorcising Ghost Interference
    Tabish Qureshi, CTP, JMI. 20th February, 2014
29. Cosmological Constant
    M. Sami, CTP, JMI. 30th January, 2014
30. Recent Progress in "Continuum QFT"
    Aleksandre Kvinikhidze , Tbilisi State University, Georgia. 23rd January, 2014
31. Light touch in superconductivity
    G. Baskaran, IMSc, Chennai. 20th January, 2014

32. Post Planck Dark Energy Constraints
    Anjan Sen, CTP, JMI. 16th January, 2014

2013

33. Some Aspects of Theoretical Physics , CTP-JMI, 14 May 2013
34. X-Ray Astronomy
    Andrzej Zdziarski, Nicolaus Copernicus Astronomical Center, Warsaw, Poland. 21st October, 2013
35. Electromagnetic Fields and Plasma Magnetosphere of Oscillating Magnetized Neutron Stars and Magnetars in General Relativity
    Bobomurat Ahmedov, Uzbekistan Academy of Sciences, Tashkent, Uzbekistan. 27th September, 2013
36. Aspects of weak measurement: Conceptual and metrological implications
    Alok Kumar Pan, Nagoya University, Nagoya, Japan. 11th September, 2013
37. Dark Energy and Beyond
    M. Sami, CTP, JMI. 29th August, 2013
38. Variations in a Theme of Variational Calculations
    Q.N. Usmani, Institute of Engineering Mathematics, University Malaysia Perlis, Malaysia. 8th August, 2013
39. Thermodynamic Aspects of Gravity
    Dawood Kothawala, Department of Physics, Indian Institute of Technology Madras. 11th July, 2013
40. Emergent Universe and Observational Constraints on EOS Parameters
    Bikash Chandra Paul, Department of Physics, North Bengal University. 5th July, 2013
41. Origin of Energy Conditions in General Relativity
    Maulik Parikh, Arizona State Univ, USA. 13th June, 2013
42. Cosmological Constant, Its Problem(s) and the Solution
    T. Padmanabhan, IUCAA, Pune. 3rd May, 2013
43. Warped Geometry Models: Some Key Issues
    Soumitra Sengupta, IACS, Kolkata. 2nd May, 2013
44. Topological Quantum Field Theories: Knots and Links in 3-dimensions and Black Holes in 3+1 dimensions
    Romesh Kaul, IMSc, Chennai 25th April, 2013
45. Naturalness and Electro-weak Symmetry Breaking: a Window Beyond the Standard Model of Particle Physics
    Romesh Kaul, IMSc, Chennai 23rd April, 2013
46. Strong coupling from the tau hadronic width
    Gauhar Abbas, IMSc, Chennai. 12th April, 2013
47. Two Component Dark Matter : A Possible Explanation of 130 GeV $\gamma-$ Ray Line from the Galactic Centre
    Debasish Majumdar, SINP, Kolkata. 4th April, 2013

48. Massive Gravity: History, motivation/de-motivation and overview
    M. Sami, CTP, JMI. 2nd April, 2013
49. Surface Tension in Curved Space-Time
    Himanshu Kumar, Physics Department, JMI. 21st March, 2013
50. Nonstandard interactions in neutrino oscillations and the recent Daya Bay & T2K experiments
    Arnab Dasgupta, CTP, JMI. 28th February, 2013
51. Quantum Key Distribution with a Master-Key
    Tabish Qureshi, CTP, JMI. 21st February, 2013
52. Special Lecture: To Higgs or not to Higgs?
    John Ellis, CERN, Switzerland. 14th February, 2013
53. High-velocity collision of particles around a Kerr black hole and its implications
    Tomohiro Harada, Department of Physics, Rikkyo University, Japan. 7th February, 2013
54. Singularities and Self-Similarity in Gravitational Collapse
    Tomohiro Harada, Department of Physics, Rikkyo University, Japan.6th February, 2013
55. Colloquium: NASA Flight Mission: JWST
    Hashima Hasan, NASA Headquarters, USA. 31st January, 2013

2012

56. Lecture Series: Quantum Field Theory
    Ashok Das, University of Rochester, USA. 19, 20 & 21 December, 2012
57. Overview of Dark Energy Model building
    Anjan Sen, CTP, J.M.I. 22nd November, 2012
58. Some Vacuum Solutions
    Naresh Dadhich, CTP, J.M.I. 8th November, 2012
59. Statistical Mechanics and the Cosmological Many Body Problem
    Naseer Iqbal, Department of Physics, University of Kashmir, Srinagar. 30th October, 2012
60. Phasing invariant parametrization of flavor mixing netrinos
    Tae-Hun Lee, S.N Bose National Centre for Basic Sciences, Kolkata. 19th October, 2012
61. Einstein's Recoiling-Slit Experiment and Complementarity
    Tabish Qureshi, CTP, J.M.I. 18th October, 2012
62. Gravity in Higher Dimensions
    Naresh Dadhich, CTP, J.M.I.11th October, 2012
63. Colloquium: The Higgs Boson Saga: As Told In September 2012
    Biswarup Mukhopadhaya, Harishchandra Research Institute, Allahabad, India. 25th September, 2012
64. Colloquium: Unification of Fundamental Forces, J. Maharana, Institute of Physics, Bhubaneswar, India. 13th August, 2012.
65. Colloquium: Discovery of Higgs Boson: Existence of Mass in Universe Explained
    Rathin Adhikari, CTP, J.M.I. , 8th August, 2012.
66. Colloquium: Dark Matter, Dark Energy, and the Accelerating Universe Bharat Ratra, Kansas State University, USA. 7th August, 2012.

67. Constraining Statistical Anisotropy of the Universe with Observations (Pre-Ph.D.-submission seminar) Nidhi Joshi, CTP, J.M.I. 19th July, 2012.
68. Loop Quantum Gravity for the bewildered Deepak Vaid, Penn State University, USA. 14th June, 2012.
69. Gravitational collapse in 5D Einstein-Gauss-Bonnet gravity Sushant Ghosh, CTP, JMI. 7th June, 2012.
70. Magnetars: New Stars, new Physics Vikram Soni, CTP, JMI. [4th June, 2012, 11:00 AM.]
71. Dark Side of the Universe and its Observational Signatures Gaveshna Gupta, CTP, JMI. 17th May, 2012.
72. Dark Matter in SUGRA Models with Universal and Nonuniversal Gaugino Masses D.P. Roy, Homi Bhabha Centre For Science Education, TIFR, Mumbai. 9th May, 2012.
73. Floating Orbits around Rotating Black Holes And Imprint Of Massive Scalars Sayan K Chakrabarty, CENTRA, Instituto Superior Tecnico, Lisbon. 23rd April, 2012.
74. Holography and Gauss-Bonnet Gravity Ishwaree Neupane, University of Canterbury, New Zealand. 17th April, 2012.
75. Random Dynamics Holger Bech Nielsen, Niels Bohr Institute, Copenhagen. 29th March, 2012.
76. New String Field Theory Liberating Right and Left Movers Holger Bech Nielsen, Niels Bohr Institute, Copenhagen. 28th March, 2012.
77. Mystical Properties of Nuclear Matter Q. N. Usmani, Universiti Malaysia Perlis, Malaysia. 27th March, 2012.
78. Looking for neutral modes in non-abelian quantum hall states via thermoelectric effect Sourin Das, Delhi University. 16th March, 2012.
79. New Identities for Jacobi Elliptical Functions and Solutions of Discrete Nonlinear Equations Avinash Khare, IISER, Pune. 22nd February, 2012.
80. On the static Lovelock black holes Naresh Dadhich, CTP, JMI. 9th February, 2012.
81. Effect of equation of state and composition on relativistic astrophysical flows Indranil Chattopadhyay, ARIES, Nainital. 9th February, 2012.
82. Black Holes Samir Mathur, Ohio State University, USA. 6th February, 2012.
83. Complementarity and the Quantum Eraser Tabish Qureshi, CTP, JMI, Delhi. 20th January, 2012.

2011

84. International Workshop on Dark Energy, CTP-JMI, 21-23 December 2011.
85. 3rd Indo-Japan Workshop on Gravitation and cosmology, , DST-JSPS, January 23, 2011.
86. Indigo - ACIGA meeting on LIGO-Australia, 50, IndIGO & DST, Feb 08-10, 2011.
87. 3rd Indo – Japan Workshop on Gravitation and cosmology, 30, DST-JSPS, January 23, 2011.
88. XXVI SERC Main School on Theoretical High Energy Physics, 58, DST, January 31-February 20, 2011.
89. IUCAA School On Gravitation And Astrophysics @CTP-JMI, March 15-18, 2011.
90. Uncertainty Relations and Atomic Entanglement Jesús Sánchez-Dehesa, Universidad de Granada, Granada, Spain. 2nd December, 2011.

91. Bipolar Representation of CMB Maps Nidhi Joshi, CTP, JMI. 24th November, 2011.
92. Cosmic Microwave Background Trispectrum and Primordial Magnetic Field Limits Pranjal Trivedi, Sri Venkateswara College, DU. 17th November, 2011.
93. Standard Cosmology Delayed Anjan Ananda Sen, CTP, JMI. 20th October, 2011.
94. The cosmic distance duality Remya Nair, CTP, JMI. 13th October, 2011.
95. The OPERA result on the neutrino speed and its aftermath Amitava Raychaudhuri, University of Calcutta, Kolkata. 12th October, 2011.
96. Dark energy and its possible alternatives Amna Ali, CTP, Jamia Millia Islamia, Delhi. 19th September, 2011.
97. Black Holes Attractors, OSV Conjecture and Hybrid Formalism Chandrasekhar Bhamidipati, University of Sao Paulo, Brazil. 8th September, 2011.
98. Cosmological Seed Magnetic Field From Inflation Bharat Ratra, Kansas State University, USA. 8th August, 2011.
99. Modelling non-linear large scale structure using Lagrangian Perturbation Theory (LPT) Sharvari Nadkarni-Ghosh, S. N. Bose National Center for Basic Sciences, Kolkata. 22nd July 2011.
100. Perturbations of D- and F-Layers of Ionosphere Measured at Tashkent GPS and VLF Stations and Plasma Magnetosphere of Oscillating Magnetized Neutron Stars in General Relativity Bobomurat Ahmedov Institute of Nuclear Physics, Uzbekistan Academy of Sciences, Uzbekistan. 23rd June 2011

2010

101. VIII FTAG meeting, 40, IUCAA-Pune , IMSc-Chennai, SINP-Kolkata, HRI-Allahabad,CTP-JMI, 19th-23rd April 2010.
102. Pauli-Forbidden Transitions from Non-commutative Space-times A. P. Balachandran Physics Department, Syracuse University, Syracuse, NY, USA 14th May 2010

2009

103. Indo Japan Workshop on Gravitation and Cosmology, , Dept. of Science and Technology, Japan Society for Promotion of Science, Jamia Millia Islamia, 29-30 December 2009.
104. V.V. Narlikar memorial lecture, 50, JMI, 28th Oct, 2009, CTP.
105. Holography, gauge gravity connection and black hole entropy Parthasarathi Majumdar, Theory Group, Saha Institute of Nuclear Physics, Kolkata 9th Dec 200
106. Basic Constituents of Matter-visible & Invisible D. P. Roy, Tata Institute of Fundamental Research, Mumbai 13th Nov 2009
107. Simultaneous Position and Momentum Measurement in Quantum Mechanics N.D. Hari Dass, Director, Poorna Prajna Institute of Scientific Research, Bangalore 30th Sep 2009

108. The Standard Model of Cosmology ... and Open Questions
Bharat Ratra, Kansas State University, U.S.A. 16th Jul 2009
109. "Warped compactification & the quest for a realistic cosmology"
Ishwaree Neupane University of Canterbury, New Zealand 9 Jun'09
110. "International Astronomy Year Celebration How thick is our galaxy?"
Sabyasachi Chatterjee India Institute of Astrophysics, Bangalore 17'Apr,09
111. "Warped braneworld models -- some key issues" Soumitra SenGupta, Department of Theoretical Physics Indian Association for the Cultivation of Science, Kolkata 8 Apr'09
112. "On Geometry, Topology and Physics" S. Afsar Abbas, Centre for Theoretical Physics, Jamia Millia Islamia 1 Apr'09
113. "Exact Inflation and Cosmological Parameters" Sergey Chevron, Ulyanovsk State University, Russia 30 Mar'09
114. "New Physics at the LHC: Prejudice and Prospects"Biswarup Mukhopadhaya, Harish-Chandra Research Institute, Allahabad 27 Mar'09
115. "Non-Gaussianity of the CMB temperature fluctuations"Pravabati Chingangbam, Korea Institute for Advanced Study, Seoul, South Korea. 27 Mar'09
116. "Cosmic Microwave Background Radiation & Relativistic Heavy Ion Collisions" Ajit M. Srivastava, Institute of Physics, Bhubaneshwar 25 Mar'09

2008

117. Indo-Japan Workshop on Cosmology, Dept. of Science and Technology, Japan Society for Promotion of Science, Jamia Millia Islamia, 27 December 2008.
118. Two day meeting on prospects and problems in Gravitation and Cosmology, Jamia Millia Islamia, 29-30 January 2008.
119. HEPCOS-2008 on Advances in High Energy Physics & Cosmology, 11-12 March, 2008,
120. "Geometric Tachyons" S. Panda, Harish-Chandra Research Institute, Allahabad 26 Feb'08
121. "Abelian 2-Form Guage Theory: Recent Developments"R.P. Malik, Department of Physics, BHU 2 Mar'08
122. "Parity Violation to Nobel 2008" Sandip Pakvasa, Dept. Of Physics and Astronomy, University of Hawai, USA 24 Feb'08
123. "Physics of Time Travel" Deshdeep Sahdev, Department of Physics, IIT Kanpur 4 Feb'08
124. "Why do we live in four dimensions?" Naresh Dadhich Inter-University Centre for Astronomy & Astrophysics, Pune 23 Jan'08
125. "Gravitino Production in an Inflationary Universe and Implications for Leptogenesis" Raghavan Rangarajan, Physical Research Laboratory, Ahmedabad 22 Dec'08
126. "Black Holes in Higher Derivative AdS Gravity" Dumitru Astefanesei, Albert Einstein Institute, Potsdam, Germany 18 Dec'08
127. "Holograviy"Stefan Theisen, Albert Einstein Institute, Potsdam, Germany 27 Nov'08
128. "Black Hole Evaporation and Information loss"Madhavan Varadarajan, Raman Research Institute,Bangalore 24 Nov'08

129. "Universal Forces and the Dark Energy Problem" S. Afsar Abbas, Centre for Theoretical Physics, JMI 21 Nov'08
130. "Local fermionic dark matter with mass dimension one"D. V. Ahluwalia, Cheng-Yang Lee, D. Schritt, Department of Physics and Astronomy, University of Canterbury, New Zealand 19 Nov'08
131. "A New Fundamental Duality in Quantum Mechanics"S. Afsar Abbas, Centre for Theoretical Physics, JMI 12 Nov'08
132. "Nonuniform Circular Ensembles"Sandeep Kumar, School of Physical Sciences, JNU, New Delhi 23 Sep'08
133. "A Solution to the Puzzle of Magnetars"Vikram Soni, National Physical Laboratory, New Delhi 22 Sep'08
134. "Lightest supersymmetric Neutral Higgs in the extra dimensional scenario" Swarup Majee, Harish-chandra Research Institute, Allahabad 4 Sep'08
135. "Reliable predictions from Quantum Cosmology ?" Golam M Hossain, Institute for Gravitation and The Cosmos, Penn State University, USA 12 Aug'08
136. "Neutrino masses: from present knowledge to questions for the future" Silvia Pascoli, University of Durham, U.K. 11 Aug'08
137. "Self Similarity and Nucleon Structure Function at Small Bjorken x" Dilip K. Choudhury, Deptt. of Physics, Gauhati University, Guwahati 22 Jul'08
138. "Inhomogeneous Perfect Fluid Universe with electromagnetic field in Lyra's manifold" Anirudh Pradhan, Hindu Post-Graduate College, Ghazipur, U.P. 8 Jul'08
139. "Molecules in Cool Cosmic Objects" Suresh Chandra 24 Jun'08
140. "Core Nucleus Dynamics in U-Hypernuclei" Q. N. Usmani 22 Feb'08

Annexure - ERD-V:
Participation of Students and Faculty in Extension Activities
Centre for Theoretical Physics, JMI

- The faculty and senior NET qualified students help the juniors for NET/GATE examinations. The students also prepare in group for these exams.
- The CTP students association organizes lectures which are delivered by themselves or faculty on some recent happenings in the thrust area of CTP.
- The students also helps the faculties in Organizing Scientific events by taking responsibilities, e.g., making Conference Announcement Poster, in Registration, Pick-up participants (especially) foreigners etc.
- CTP scholars help each other in learning and exploring Mathematical Software.
- Astronomy at popular level by increasing awareness among school children with portable Planetarium
- Organizing introductory schools intended to give opportunity to students, research scholars and faculty members in the region in particular of JMI to get an exposure to the exciting fields.
- CTP has high profile in outreach activities where Popular Lectures, Video Lectures are organized which are intended to share the happenings and excitement in the field of astronomy gravitation & cosmology for people of all ages One faculty has also appeared "TV SHOW: TAARO KI SAIR"

Faculties:

- Sanjay Jhingan
- Guest Lecturer, SERC School on Theoretical High Energy Physics (Main),Organised by DST, Govt. of India held at CTP, JMI in 2011.
- Lecture on Classical Electrodynamic at Miranda House, Delhi University in 2009.
- Science expert for a Doordarshan serial for school children “Taron Ki Sair”. The concept was developed by Vigyan Prasar, an organization under Department of Science and Technology in 2009
- Taught at Jamia School for Higher Secondary students
- Taught at Dept of Applied Sciences, JMI for the First Engineering Students

Anjan A Sen

- Guest Lecturer at SERC School on Theoretical High Energy Physics (Preparatory), Organized by DST, Govt. of India held at S.G.B.T. Khalsa College, Delhi in 2008
- Guest Lecturer at SERC School on Theoretical High Energy Physics (Preparatory), Organised by DST, Govt. of India held at BITS Goa, in 2010.

- Delivered an Invited Popular Lecture on "Dark Side of the Universe: Era of New Cosmology" during event "Lectures on Nobel Prizes (2011)" at Indian Institute of Technology, Delhi in May 2012.
- Delivered a talk on "Modern Cosmology" at the 11th Refresher Course in Physics at J.N.U. in Februrary 2012.
- Delivered a series of three lectures on ``The Modern Cosmology'' for the PostGraduate students in the Department of Physics at Calcutta University, Kolkata in April 2011.
- Taught Jamia Polytechnique for First year Students.

Rathin Adhikari

- R. Adhikari taught physics at Jamia School in the Higher Secondary section
- R. Adhikari taught at JMI University Polytechnic the 1st year students for Diploma in Computer Engineering in both the semesters in 2011-2012 session and also taught at JMI University Polytechnic the 1st year students for Diploma in Electronics Engineering for about 1 month in the 1st semester in 2011-2012 session
- Guest Lecturer during 31stJan. to 9th Feb, '11 in XXVI SERC school for training students in High Energy Physics at the national level held at CTP, JMI