

# CURRICULUM VITAE

## TAPOMOY GUHA SARKAR

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### Personal Profile

Date of Birth : 12<sup>th</sup> January 1978.

Sex : Male

Nationality : Indian

Marital status : Single

Languages known : English, Bengali, Hindi

### Academic Profile

Degree	Institute	Year	Result
<b>Doctorate of Philosophy</b> in Physics Area of Research - <b>COSMOLOGY</b>	Indian Institute Of Technology, Kharagpur.	2011 (expected)	NA
Supervisor : <b>Dr. Somnath Bharadwaj</b>			
<b>Master Of Science</b> in Physics	Indian Institute Of Technology, Kanpur.	2001	CPI 8.5/10
<b>Bachelor Of Science</b> Physics (Honours)	University Of Calcutta. Presidency College	1999	First Class (70.2%)

## **Technical Skills**

## **Computational Skills**

Operating Systems : WINDOWS , LINUX.

Programming Languages : C

Programming Software : Mathematica, Octave.

Application Packages:

Scientific packages : AIPS, Numerical Recipes in C.

Typesetting software : LATEX, MS Word, Openoffice

Graphical Interface : Excel, Gnuplot,

## **Teaching Experience**

Teaching Assistant : SUNY Stony Brook NY (2001 -2004) Duty included teaching undergraduate laboratory courses.

Lecturer : Dr. B.C. Roy Engineering College, Durgapur (affiliated to WBUT) 2006 – 2007.

Tutor : Course name “Advanced Mathematical Methods”  
Centre For Theoretical Studies, IIT Kharagpur, Autumn 2009.

## **Other Experience**

Joined graduate school at Department of Physics at SUNY Stony Brook NY in fall of 2001 and as a graduate student got waived from course work requirements after qualifying for relevant section of the PhD qualifying examination. As a part of graduate school, took advanced courses like **Advanced General Relativity** and **Quantum Field Theory**.

## **Research Interests**

- Cosmology using the redshifted HI 21 cm observations.
- Cross-correlation studies in the Post reionization era.
- Cosmological imprints of Modified Gravity theories.
- Cosmological Perturbation Theory.
- General Relativity.
- Theoretical aspects of Radio Astronomy.

## **Schools / Workshops / Symposia / Conferences Attended**

- ***Visiting Students Research Programme (2000)***  
Tata Institute Of Fundamental Research  
May- June 2000
- ***Radio Astronomy School (2008)***  
Organized by NCRA (TIFR) Pune, INDIA  
May 12 - July 4, 2008
- ***Cosmology With CMB and LSS***  
Organized by International Centre for Theoretical Sciences, TIFR and IUCAA.  
July 21 - August 18, 2008.
- ***From Black Holes To the Universe : Gravity at Work***  
25th Meeting of the Indian Association for General Relativity & Gravitation (IAGRG)  
Jan 28 - Jan 31, 2009.
- ***Tools Of Theoretical Physics and The Problem Of Turbulence***  
Organized by : S. N Bose National Centre For Basic Sciences , Kolkata  
February 16 - February 20, 2009.
- ***12<sup>th</sup> Young Astronomer's Meet***  
Organized by : Centre For Theoretical Studies IIT Kharagpur.  
March 14 - March 16, 2009.  
(Local Organizing Committee member )
- ***Indian Conference On Cosmology and Galaxy Formation (ICCGF)***  
Organized By Indian Institute Of Technology, Kanpur.  
October 30 – Nov 01, 2009
- ***International Conference on Cosmological Reionization***  
Organized by Harish Chandra Research Institute. Allahabad.  
February 16 - February 20, 2010.
- ***26<sup>th</sup> IAGRG Meeting, Harish Chandra Research Institute. Allahabad.***  
January 19 – January 21, 2011

## **Talk Given on Various Occasions**

1. **Dark Energy – Supernova Data Results**  
Centre For Theoretical Studies, Indian Institute Of Technology  
Kharagpur.  
7<sup>th</sup> February 2008
2. **The CMBR ISW and HI 21 Cross-correlation Angular Power Spectrum**  
25th Meeting of the Indian Association for General Relativity &  
Gravitation (IAGRG) , SINP Kolkata.  
30<sup>th</sup> January 2009.
3. **Cosmology with  $f(R)$  Gravity**  
Centre For Theoretical Studies, Indian Institute Of Technology, Kharagpur.  
March 2009.
4. **Gravitational Wave Detection Using Redshifted 21- cm Observation**  
12<sup>th</sup> Young Astronomer's Meet . IIT Kharagpur.  
14<sup>th</sup> March 2009.

5. **Gravitational Wave Detection Using Redshifted 21- cm Observation**  
Indian Conference On Cosmology and Galaxy Formation (ICCGF), IIT Kanpur .  
31<sup>st</sup> October 2009.
6. **21cm Observations: A Study in Cross-correlation**  
Centre For Theoretical Studies, Indian Institute Of Technology, Kharagpur.  
7<sup>th</sup> November 2009.
7. **Cosmological HI A Study in Cross-correlation**  
Advanced Technology Development Centre, Indian Institute Of Technology, Kharagpur.  
10<sup>th</sup> November. 2009.
8. **Lyman-alpha and HI 21 cm signal in Cross-correlation**  
Harish Chandra Research Institute, Allahabad.  
19<sup>th</sup> February, 2010.
9. **The Post-reionization Redshifted 21-cm Signal and its Cross-correlations**  
IRS-IUCAA University Of Calcutta ( Ballygunge campus)  
7<sup>th</sup> August, 2010.

### **Awards and Scholarships Received**

1. Received the National Scholarship for ranking within the top 100 in the Higher Secondary Examination.
2. Received the Kartik Ch Mukherjee Memorial Prize for obtaining the First position in the BSc Examination (Physics Honours) from the students of the college (Presidency College Calcutta)
3. Received the Partha Sarathi Gupta memorial Book prize for securing first position in B Sc honours part 1 examination from amongst students of Presidency College Calcutta.
4. Received the Swapan Saha Memorial Book Prize and Makhanlal Sarkar Prize for obtaining First position in B Sc Honours examination amongst students of Presidency College.
5. Qualified for the NET ( National Eligibility Test ) conducted jointly by CSIR - UGC.
6. Qualified GATE ( Graduate Aptitude Test ) conducted by the IITs and IISc Bangalore on behalf of MHRD, Govt. Of India.

## **List of Publications**

1. ***Cross-correlation of HI 21-cm signal and Lyman-alpha Forest : A probe of Cosmology***  
**Tapomoy Guha Sarkar**, Somnath Bharadwaj, Tirthankar Roy Choudhury, Kanan Datta.  
Accepted for Publication in **Monthly Notices of the Royal Astronomical Society** arXiv:1002.1368
2. ***The Effect of w-term on Visibility Correlation and Power Spectrum Estimation***  
Prasun Datta, **Tapomoy Guha Sarkar**, S Pratik Khastgir.  
**Monthly Notices of the Royal Astronomical Society Letters** 406, L30, 2010. arXiv:0912
3. ***CMBR Weak Lensing and HI 21-cm Cross-correlation Angular Power Spectrum***  
**Tapomoy Guha Sarkar**.  
**Journal of Cosmology and Astroparticle Physics** 1002, 002, 2010. arXiv: 0908.1840
4. ***The CMBR ISW and HI 21-cm Cross-correlation Angular Power Spectrum***  
**Tapomoy Guha Sarkar**, Kanan K. Datta, Somnath Bharadwaj.  
**Journal of Cosmology and Astroparticle Physics** 0908: 019, 2009. arXiv: 0810.3649
5. ***Gravitational Wave Detection Using Redshifted 21-cm Observations***  
Somnath Bharadwaj, **Tapomoy Guha Sarkar**  
**Physical Reviews D** 79:124003, 2009, arXiv: 0901.3655

## **Manuscripts Under Preparation**

1. ***The Imprint of BAO on 21-cm and Lyman-alpha Cross-correlation***  
**Tapomoy Guha Sarkar**, Somnath Bharadwaj.  
(In preparation)