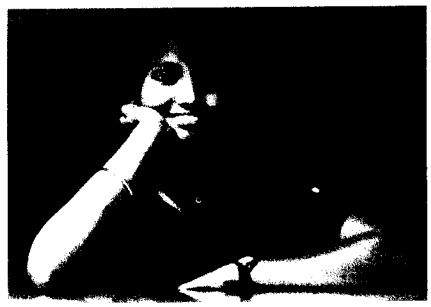
Disha Sawant

PhD student
Physics Department
University of Ferrara
Italy- 44122
Phone: +39-3245521331
sawant@fe.infn.it



Education

Pursuing PhD in Astrophysics & Cosmology
Erasmus Mundus Joint Doctorate Program
University of Ferrara, Italy
University of Nice, France
University of Rome Sapienza, Italy
Dissertation title: "Cosmology with GRBs"

Master of Science (Year 2) in Physics
August 2011
University of Mumbai, India
Thesis title: "Microprocessor appplication to generate a program for 'Automated multi-storied Car parking system'"

Master of Science (Year 1) in Physics
August 2010
University of Mumbai, India
Thesis title: "Mathematical formula for predicting refractive index of medium from comparative techniques"

Bachelor of Physics
June 2009
D. G. Ruparel College
Mumbai, India

Educational Details

Degree/ Exam	Board/ University	College/ School	Year of Passing	Class	Percentage	Rank
Std. X/10th/ S.S.C.	Maharashtra Board	Shailendra Education Society, Dahisar, Mumbai	2004	Distinction	90.00%	1st in School
Std. XII/12th/ H.S.C.	Maharashtra Board	D. G. Ruparel College Mahim, Mumbai	2006	Distinction	78.00%	1st in Physics
Std. XIII/13th/ F.Y.B.Sc	Mumbai University	D. G. Ruparel College Mahim, Mumbai	2007	Distinction	75.00%	1st in Physics

Std. XIV/14th/ S.Y.B.Sc.	Mumbai University	D. G. Ruparel College Mahim, Mumbai	2008	Distinction	78.00%	1st in Physics
Std. XV/15th/ T.Y.B.Sc.	Mumbai University	D. G. Ruparel College Mahim, Mumbai	2009	Distinction	80.00%	2nd in Physics
Std. XVI/16th/ M.Sc. Part-1	Mumbai University	D. G. Ruparel College Mahim, Mumbai	2010	1st	62.00%	2nd in Physics
Std. XVII/17th/ M.Sc. Part-2	Mumbai University	D. G. Ruparel College Mahim, Mumbai	2011	1st	66.00%	1st in college

Highest degree: Master in Science (Physics) from Mumbai University

Programming Languages known: C, C++, Assembly language, IDL, IRAF

Operating systems: Windows 7, 8, Vista, XP, Ubuntu

Research experience

1. Worked under Prof. Alak Ray in the Department of Astronomy and Astrophysics, Tata Institute of Fundamental Research (TIFR), Mumbai during Visiting Students' Research Program (VSRP 2010) on the topic of **"Supernova 2009bb: Optical Analysis"**.

2. Worked under Prof. Prasad Subramanian as a project student in Indian Institute of Scientific Education and Research (IISER), Pune on the topic of **"Type- I Solar Radio Bursts"**.

3. During my Phd so far, in order to apply **GRBs for cosmology**, we studied the possibility to extract model independent information about the dynamics of the universe by using a cosmographic approach considering only minimal assumptions (isotropy, homogeneity, Taylor series expansion of distances) without choosing any dynamical model as priori.

In order to explore it systematically, we performed a high-redshift analysis that allowed us to put constraints on the cosmographic expansion up to the fifth order, based on the Union2 Type Ia Supernovae (SNIa) data set. The Hubble diagram was constructed from some Gamma Ray Bursts luminosity distance indicators, and gaussian priors on the distance from the Baryon Acoustic Oscillations (BAO), and the Hubble constant H_0.

Actually we used two GRB data sets, one sample consisted of 109 high redshift GRBs and has been constructed from the Amati $E_{p,i} - E_{iso}$ correlation. The second GRBs sample is constructed from 66 Gamma Ray Bursts (GRBs) derived using only data from their X- ray afterglow light curve.

4. I am currently working on Gamma Ray bursts' datasets (Beppo SAX, Fermi, Swift, BATSE, Konus-Wind) to refine time averaged values of peak energies and luminosities by taking into account uncertainties on spectral parameters

and fluences.

Also, in order to understand the selection effects and instrumental impact of different GRB missions on the standradization of GRBs, I am working on comparitive analysis of different GRB spectral components on the Amati $E_{p,i}$ – E_{iso} correlation.

In order to figure out which is the best intensity indicatior for standardizing GRBs, I am also working generating various GRB correlations on the basis of numerous intensity indicators and trying to compare them on the basis of intrinsic scatter and accuracy in measuring the value of Ω_M.

Moreover, I am also involved in studying GRB spectra on time resolved scale, in order to understand if the $E_{p,i}$ – intensity correlation holds true even within a GRB (intrinsics evidence) and to understand the selection effects and instrumental bias in more details.

Extra- curricular courses attended

1. 1 year certificate course of "Basic Astronomy and Astrophysics" conducted by Mumbai University at Nehru Planetarium in 2008.

2. 1 year certificate course of "Advanced Astronomy and Astrophysics" conducted by Mumbai University at Nehru Planetarium in 2010.

3. University course for Italian Language

4. Mathematical Physics Course

5. Radiative processes in Astrophysics

6. X-Ray and Gamma Ray Astronomy Techniques

7. Advanced certified course on IDL by a proffessional EXCELIS VIS trainer

Schools attended

1. 2 weeks "Winter School in Astronomy and Astrophysics" conducted by TIFR. December 2009.

2. "Winter School on High Energy Astrophysics", a school on High Energy Astrophysics with special emphasis on accretion onto compact objects held at the Harish- Chandra Research Institute (HRI). 6-18 February 2012.

3. Erasmus Mundus Astrophysics school on in Nice, France. 3-19 September 2012

4. "Huntsville Gamma Ray Burst Symposium" in Nashville, Tennessee, USA. 14-18 April 2013

5. "The 2013 yearly ICRANet Scientific Meeting on Relativistic Astrophysics" in Pescara, Italy. 3-21 June 2013

6. Erasmus Mundus Astrophysics school in Nice, France. 15 May-1 June 2013

7. Erasmus Mundus Astrophysics school in Nice, France. 2-16 September 2013

8. "The 1st Scientific ICRANet Meeting in Yerevan, Armenia on Black Holes: the largest energy sources in the Universe". 30 June - 4 July 2014

9. Erasmus Mundus Astrophysics school in Les Houches, France. 10-16 May 2014

10. Erasmus Mundus Astrophysics school in Nice, France. 8-19 September 2014

Journal publications

1. Marek Demianski, Disha Sawant, Ester Piedipalumbo, Lorenzo Amati: Cosmography issues and cosmological scenarios for the accelerated Universe: new results and implication for dark energy (MNRAS status: Referee report discussion)

2. Disha Sawant, Lorenzo Amati: Variations in Amati correlation and their impact on Cosmological computations (in preparation)

3. Disha Sawant, Lorenzo Amati: Time resolved GRB correlation (in preparation)

Conference publications

PRIN Meeting on Gamma Ray Bursts in Ferrara university, 10 April 2014

"Swift: 10 Years of Discovery" international meeting in La Sapienza University, Rome, Italy, 2-5 December 2014

2nd César Lattes Meeting in Niterói, Rio De Janeiro, April 13-18, 2015

14th Marcel Grossmann Meeting in **Rome, July 12-18, 2015**

Presentations

Talk: Nice meeting June 2013 on the introduction to thesis topic

Talk: Nice meeting September 2013 on work updates on thesis

Talk: Prin meeting on 10th April 2014 on "investigation of Amati correlation in terms of selection and instrumental parameters" held in University of Ferrara

Talk: Les Houches meeting May 2014 on progress report of thesis

Talk: Nice meeting September 2014 on work updates on thesis

Talk: University of Ferrara on 7th October 2014 on work progress in the group meeting

Talk: 2nd César Lattes Meeting in Niterói, Rio De Janeiro, April 13-18, 2015 on "GRB correlation(s) for cosmology"

Talk: 14th Marcel Grossmann Meeting in Rome, July 12-18, 2015 on "Variations in the $E_{p,i}$ – intensity correlation and their impact on cosmological computations"

Posters

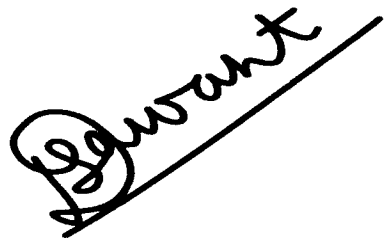
"Standardizing GRBs for Cosmological purposes" in Huntsville Gamma Ray Burst Symposium GRB 2013 in Nashville, Tennessee, USA. 14-18 April 2013

"GRB correlation(s) for cosmology" in "Swift: 10 Years of Discovery" international meeting in La Sapienza University, Rome, Italy, 2-5 December 2014

References

Dr. Lorenzo Amati
Instituto di Astrofisica Spaziale e Fisica cosmica di Bologna- CNR
Via P. Gobetti 101, Bologna
Italy– 40129
Phone: 39-0516398745
Email: amati@iasfbo.inaf.it

Prof. Filippo Frontera
Dipartimento di Fisica e Scienze della Terra
University of Ferrara
Via Saragat 1, Ferrara
Italy- 44121
Phone: 39-0532 974254
Email: frontera@fe.infn.it



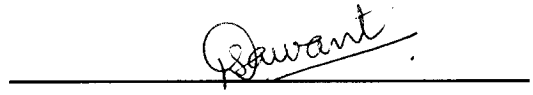
Elenco dei titoli scientifici di Disha Sawant

1. Laurea triennale in Fisica conseguita in data 16/10/2009 presso l'Università di Mumbai con la votazione 637/800,
Titolo della tesi: "Generating refractive indices of liquid mediums through reflection methods".

2. Laurea specialistica in Fisica ("electronics and microcontrollers") conseguita in data 09/08/2011 con la votazione 656/1000 presso l'Università di Mumbai,
Titolo della tesi: "Through the looking Glass: Optical Emission from Supernova 2009bb".

Ferrara, 08/09/2015

Il Dichiarante



University of Mumbai

No. 416

Certificate showing the number of marks obtained by

Shri Sawant Dipak Subhash Chhaya in each head of

passing at the **Bachelor of Science** (B.Sc.) Examination (Three Year Course) Examination of April 2009.

Seat No.	Heads of Passing																	Remarks
	Major Subject/s : Physics											Applied/Vocational Component Group : Electronic Instrumentation						
3559	Subject – I					Subject – II/I						Applied/Vocational Component Group					GRAND TOTAL	
	1	2	3	Total	Practical	1	2	3	Total	Practical	Major Theory Total	Total of Major Subject	1	2	Total	Practical	Total		
Maximum Marks	100	100	100	200	100	100	100	100	300	100/200	600 /400	600	75/100 /60	75/100 /60	150/200 /120	50/80 /100	200 /300	800/900	First Class
Minimum for passing	20	20	20	70	35	20	20	20	70/140	35/70	—	—	15/20 /12	15/20 /12	52/70 /42	17/28 /35	—	—	
Marks Obtained	92	64	50	—	—	76	—	—	152	133	272	465	48	56	104	68	172	637	
†Term Work																			

† For Subject Mathematics only

Received Fee Rs. 50/-/ 100/- Entered by

Result declared on 11-6-2009 Checked by

Result amended on — Read by

Mumbai, 16 OCT 2009

Assistant Registrar

Controller of Examinations

– O.229, @ –O.5042/O.5043, * – O.5045, F – Head of Failure, ~ –Marks Carried, E – Exemption in the Head, – Not applicable, / – Female, A – Absent.

Univers[illegible]

CCI:03B:0037

[illegible]

/SAU[illegible] CHHAYA

[illegible] THE MASTER [illegible] APRIL 2011

[illegible] PASSING

SUBJECT [illegible] ELECTRONICS - MICRO.) (SCHEME-A)

PRACTICALS :[illegible] PROJECT ; PROJECT INTERNAL ;

[illegible]

THEORY

703

MAXIMUM MARKS [illegible]	-	75	--	--	75	--	--	75	--	--	--	300
MINIMUM MARKS FOR PASSING	--	18	--	--	18	--	--	18	--	--	--	120
MARKS OBTAINED	--	35	--	--	30	-	--	046	--	--	--	149

Last column: TOTAL OF THEORY

PRACTICALS

MAXIMUM MARKS	--	--	50	--	50	--	-	50	--	--	--	200	500	500	1000	
MINIMUM MARKS FOR PASSING	--	--	12	--	12	--	--	--	--	--	--	080	---	---	---	
MARKS OBTAINED	--	--	45	--	48	-	--	49	--	--	--	154	343	313	656	SECOND CL

Columns include: TOTAL OF PRACTICALS; GRAND TOTAL OF PARTS I & II

PART-I THEORY- 120,PART-I&II-THEORY-269 /600

ISSUE DECLARED ON [illegible]

[illegible]

CONTROLLER OF EXAMIN

005