



Jamal Nazrul Islam Memorial Winter School

Exploring the mathematics of the universe!

January 28 - February 03, 2025

Residential Campus, Brac University, Savar, Bangladesh

Organisers (School of Data and Sciences, BRAC University)

1	Mahbub Majumdar	Dean
2	Syed Hasibul Hassan Chowdhury	Mathematics Program Coordinator
3	Ahmed Rakin Kamal	Lecturer
4	Sayed Tashnuba Jahan	Lecturer
5	Rafsanjany Jim	Lecturer
6	Arnab Chakraborty	Lecturer
7	Jhorna Akter	Lecturer

Volunteers: Walid, Tahmid, Arko, Fahim, Hiya, Saif, Nafisa, Reaz, Fabliha, Yusrat, Tanmoy, Atonu, Samiha, Ishmam, Raisa, Pushon, Fabiha, Samiha, Fiza,

Lectures & Instructors**(Pre-school)**

Sl.	Topic	Instructor	Number of Classes
1	General Relativity and Cosmology	Sayed Tashnuba Jahan	4
2	Quantum Field Theory	Shadman Salam	4
3	Standard Model and Beyond	Shadman Salam	2
4	Geometry and Topology in Physics	Md. Rafsanjany Jim	4
5	Introduction to String Theory a) Basics of String theory b) String Theory and Compactification	Mir Mehedi Faruk and Ahmed Rakin Kamal	6

6	Black Hole Geometry & Thermodynamics	Mahbub Majumdar	2
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Tentative Timeline:

Pre-school Lectures Schedule

(19/01/25 - 23/01/25)

Day 1 (19/01/2025)

Topic	Instructor	Time
Quantum Field Theory - 1	Shadman Salam	9:30 - 10:50
Quantum Field Theory - 2	Shadman Salam	11:00 - 12:20
Geometry and Topology in Physics - 1	Md. Rafsanjany Jim	12:30 - 13:50
Lunch		14:00 - 15:00
Geometry and Topology in Physics - 2	Md. Rafsanjany Jim	15:10 - 16:30

Day 2 (20/01/2025)

Topic	Instructor	Time
General Relativity - 1	Sayedta Tashnuba Jahan	9:30 - 10:50
Quantum Field Theory - 3	Shadman Salam	11:00 - 12:20
General Relativity - 2	Sayedta Tashnuba Jahan	12:30 - 13:50
Lunch		14:00 - 15:00
Quantum Field Theory - 4	Shadman Salam	15:10 - 16:30

Day 3 (21/01/2025)

Topic	Instructor	Time
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Standard Model-1	Shadman Salam	9:30 - 10:50
Cosmology - 1	Sayeda Tashnuba Jahan	11:00 - 12:20
Geometry and Topology in Physics - 3	Md. Rafsanjany Jim	12:30 - 13:50
Lunch		14:00 - 15:00
Standard Model-2	Shadman Salam	15:10 - 16:30

Day 4 (22/01/2025)

Topic	Instructor	Time
Cosmology - 2	Sayeda Tashnuba Jahan	9:30 - 10:50
String Theory - 1	Ahmed Rakin Kamal	11:00 - 12:20
Geometry and Topology in Physics - 4	Md. Rafsanjany Jim	12:30 - 13:50
Lunch		14:00 - 15:00
String Theory - 2	Ahmed Rakin Kamal	15:30 - 16:30

Day 5 (23/01/2025)

Topic	Instructor	Time
String Theory - 3	Ahmed Rakin Kamal	9:30 - 10:50
String Theory - 4	Mir Mehedi Faruk	11:00 - 12:20
String Theory - 5	Mir Mehedi Faruk	12:30 - 13:50
Lunch		14:00 - 15:20
String Theory 6	Mir Mehedi Faruk	15:30 - 16:30

Day 6 (28/01/2025)

Topic	Instructor	Time
Black Hole Geometry & Thermodynamics	Mahbub Majumdar	14:30 - 15:50
Black Hole Geometry & Thermodynamics	Mahbub Majumdar	16:00 - 17:30

Main-school Lectures Schedule**(29/01/25 - 03/02/25)****Day 1 (29/01/2025)**

Title	Speaker	Time
Opening Remarks		10:00 - 11:00
Black hole Information Paradox -1	Suvrat Raju	11:00 - 12:30
Lunch		12:30-14:30
Black hole Information Paradox -2	Suvrat Raju	14:30 - 16:00

Day 2 (30/01/2025)

Title	Speaker	Time
Cosmology and String Theory- 01	Michele Cicoli	09:20 - 11:00
Black holes in String Theory-01	Ashoke Sen	11:10 -12:40
Lunch		12:40 - 14:10
Cosmology and String Theory- 02	Michele Cicoli	14:20 - 15:50
Official Football and Badminton Tournament		16:00-17:30
Cultural night and Conference Dinner		18.00 - 21.00

Day 3 (31/01/2025)

Title	Speaker	Time
Cosmology and String Theory- 03	Michele Cicoli	09:00 - 11:00
Cosmology and String Theory- 04	Fernando Quevedo	11:10 -12:40
Lunch		12:40 - 14:10
Cosmology and String Theory- 05	Michele Cicoli	14:20 - 16:00
Black holes in String Theory- 02	Ashoke Sen	16:05 - 17:35

Day 4 (01/02/2025)

Title	Speaker	Time
Cosmology and String Theory- 06	Fernando Quevedo	09:00 - 11:00
Black hole Information Paradox -3	Suvrat Raju	11:10 -12:40
Lunch		12:40 - 14:10
Cosmology and String Theory- 07	Fernando Quevedo	14:20 - 16:00
Black holes in String Theory- 03	Ashoke Sen	16:05 - 17:35

Day 5 (02/02/2025)

Title	Speaker	Time
Black holes in String Theory- 04	Ashoke Sen	09:30 - 11:00
Black hole Information Paradox -4	Suvrat Raju	11:10 -12:40
Lunch		12:50 - 14:20

Black holes in String Theory-05	Ashoke Sen	14:30 - 16:00
Black hole Information Paradox - 5	Suvrat Raju	16:10 - 17:40

