SHIFT II

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI

DEPARTMENT OF PHYSICS

ACTIVITY REPORT

General Information

Type of Activity	Invited Talk
Title of the Activity	Talk on Astronomy and Astrophysics
Date/s	12th Sep 2024
Time	1.30 PM – 3.30 PM
Venue	LIFE SEMINAR HALL
Collaboration/Sponsor (if any)	N/A

Speaker/Guest/Presenter Details

Name	Dr. RAVINDRAN
Title/Position	DIRECTOR, INSTITUTE OF MATHEMATICAL SCIENCES, CHENNAI
Organization	IMSc, Chennai
Title of Presentation	“Where do we get matter from?”

(Add/repeat above rows if there is more than 1 Speaker)

Participants Profile

Type of Participants	Students
No. of Participants	120

Synopsis of the Activity (Description)

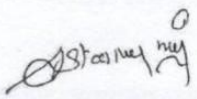
Highlights of the Activity	• Introduction to the Topic: Dr. Ravindran initiated the talk with the fundamental question: "Where do we get matter from?" • Discussion on Quarks: The talk began with an exploration of quarks, the elementary particles that form the foundation of matter. • Transition to Dark Matter: Dr. Ravindran moved on to discuss dark matter, explaining its role in the universe despite being invisible and undetectable by conventional means. • Exploration of Dark Energy: He delved into the concept of dark energy, the mysterious force driving the accelerated expansion of the universe. • Final Reflection: The talk culminated in the revisiting of the central question—"Where do we get matter from?"—leaving the audience with a thought-provoking conclusion on the origins and mysteries of the universe.

Key Takeaways	• Quarks as Fundamental Particles: Matter is built from quarks, the smallest known constituents of matter. • Dark Matter's Hidden Presence: Though invisible and undetectable directly, dark matter constitutes a significant part of the universe, influencing its structure and behavior. • Dark Energy and Universe Expansion: Dark energy is responsible for the accelerated expansion of the universe, yet its exact nature remains one of the biggest mysteries in modern physics. • The Unanswered Question: The ultimate question of the origin of matter—"Where do we get matter from?"—remains unresolved, inviting further exploration and inquiry into the universe’s most fundamental properties.

Summary of the Activity	The one-day workshop on robotics, held on 10th September 2024 at MCC Nursery and Primary School for 4th and 5th standard students, introduced participants to the world of electronics and robotics. Students were first taught the basics of electronics, including simple components like resistors and LEDs. This was followed by hands-on activities where students assembled and tested LED blinking circuits, enhancing their understanding of practical electronics. The workshop also introduced students to Arduino, explaining its importance in robotics and automation. They learned how Arduino can be used to control electronic components. Finally, the session covered the role of sensors in robotics, showing how they help devices interact with their surroundings. The workshop fostered a sense of curiosity and engagement, leaving students eager to explore further.
Follow-up plan	• Engagement with IMSc: • Explore potential research collaboration opportunities between the Institute of Mathematical Sciences (IMSc) and Loyola College. • Plan joint activities such as seminars, workshops, and conferences focusing on topics like fundamental particles, dark matter, and dark energy.

	• **MOU (Memorandum of Understanding) Plans**:
	  • Draft an MOU between IMSc and Loyola College to formalize the partnership.
	  • Focus on areas such as student exchange programs, collaborative research projects, and shared resources for advanced studies in physics and astrophysics.
	• **Student Involvement**:
	  • Encourage student participation in upcoming joint initiatives.
	  • Foster opportunities for internships or research projects under the guidance of IMSc faculty.
	• **Future Talks**:
	  • Organize follow-up talks or workshops with IMSc experts on advanced topics like particle physics, cosmology, and quantum theory.

Report prepared by:

Name of the Organiser	Dr Stanley Raj A
Designation/Title	Assistant Professor
Signature	

Deputy Principal

Deputy Principal
LOYOLA COLLEGE
CHENNAI - 600 034

Vice Principal

Vice Principal
Academics - Shift II
LOYOLA COLLEGE
Chennai - 600 034

19/09/2024

HoD/Coordinator

Dr. S. CYNTHIA, M.Sc., B.Ed., M.Phil., Ph.D.
Coordinator - Shift 2
Department of Physics
Loyola College
Chennai - 600 034.

Annexure:

1. Speaker Profile
2. Photos of the activity (not more than two)
3. Attendance list of participants

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1. Speaker Profile 2. Photos of the activity (not more than two) 3. Attendance list of participants

Speaker Profile

V RAVINDRAN

HOME ACADEMIC RESEARCH RESOURCES PERSONAL

CONTACT

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The Institute of Mathematical Sciences,
IV Cross Road, CIT Campus,Taramani
hennai 600113

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e-mail : ravindra[at]imsc.res.in

WELCOME TO MY HOME PAGE

I am a theoretical high energy physicist. My area of research is precision physics relevant for physics studies at high energy colliders such as LEP, Tevatron, LHC and EIC etc. My work includes

- precise theoretical predictions for various observables from Quantum Chromodynamics (QCD) and Electro-Weak theory to unprecedented accuracy,
- understanding the perturbative structure of gauge theories such as QCD, supersymmetric SU(N) gauge theory,
- investigation of their ultraviolet and infrared structure from the perturbative results of multi-loop and multi-leg scattering processes
- developing the framework to resum certain large logarithmic contributions resulting from soft gluons and collinear parts in threshold regions.

For LHC, I have been involved in predicting inclusive rates for the production of Higgs boson(s) or a pair of leptons in Drell-Yan process or heavy state(s) in theories of large extra-dimensions. These results have played important role both in the discovery of Higgs boson at the LHC and in setting stringent bounds on the parameters of beyond the Standard Model (BSM). Recently, we have developed a formalism to resum next to threshold contributions to a production of a colorless state at the hadron colliders to all orders in perturbative QCD.

MY PUBLICATIONS

iNSPIRE.HEP

Google Scholar

Photos:


ICIDE PREVENTION
WEEK
SUICIDE PREVENTION WEEK
Department of Counselling
Psychology in collaboration with
Department of Kaushal Kendra &
Loyola Counselling Centre
(10th to 18th, September, 2024)


QUESTION:
• Matter and its constituents
• Definition of mass
• Einstein's Mass-Energy relation
• Quantum Chromodynamics
• Higgs Mechanism
• Dark Matter

Attendance Sheet:

INVITED TALK On " Where do we get Matter From ?"

Date : 12th September , 2024

Loyola Astronomy And Rocketry Club , Loyola College

ATTENDANCE SHEET

3rd Yr

S.NO.	Name	Department No.	College/Institution
1.	S.V. VISHAL	22-UPH-302	Loyola college
2.	RV. Gokul	22-UPH-217	Loyola college
3.	Haruñandha S	22-UPH-316	Loyola college
4.	J.A. Jaspen shyam Daniel	22-UPH-207	
5.	R.V. BARAT RAJ	22-UPH-216	R.V.
6.	K. Dhaneshwaran.	22-UPH-314	K.
7	Barath Karthick	22-UPH-215	
8.	S. Abishek	22-UPH-225	S.
9.	Gopal	22-UPH-209	
10	Pradeep Kumar. S	22-UPH-313	
11	Joseph ~~Roland~~ .A	~~22-UPH-308~~	
12	Nived.B	22-UPH-303	
13.	Vaishnav Babu.S	22-UPH-312	
14	Thejai Kiran. R	22-UPH-220	
15.	M Vijayunjay	22-UPH-224	
16.	Hari Krishnan. R	22-UPH-221	
17.	Shruthi Ranjan.	22-UPH-210	
18.	Vasanth vijay kumar	22-UPH-309	
19.	Vishwa rishi. N	22-UPH-319	
20.	Pradeep. S	22-UPH-318	
21.	Danush	22-UPH-205	
22.	Joffry alwin David	22-UPH-203	
23	Daniel	22-UPH-301	
24	Syam Sundar	22-UPH-208	
25	Dinesh KUMAR. N	22-UPH-206	
26	~~V.P Thamilarasu~~	~~22-UPH-210~~	
27	NACHIYAPPAN. C	23-UPH-231	

2nd-Yr

28.	A.ABINESH	23-UPH-223	A. Abinesh
29.	John Fleming.V.M	23-UPH-229	John Fleming
30	Raj Kumar.U	23-UPH-231	Raj Kumar U
31.	A. Reshe Kathir	23-UPH-219	A. Reshe Kathir
32.	Giridharan P	23-UPH-212	Giridharan P
33.	Rohith. L	23-UPH-242	Rohith L
34	M. Winfred Miranda	23-UPH-237	M. Winfred
35	KISHAN BHOWAL	23-UPH-206	Kishan Bhowal
36	L. Ludian	23-UPH-222	Ludian
37	ALAN JOHN	23-UPH-220	Alan
38	Kumaresh	23-UPH-225	Kumaresh
39.	A. Chandramouliya	23-UPH-201	A. Chandramouliya
40.	Vikram	23-UPH-234	Vikram
41.	Ved	23-UPH-203	Ved
42.	Aishikle Sengupta	23-UPH-217	Aishikle Sengupta
43	Abin	23-UPH-215	Abin
44	John Kevin	23-UPH-238	John Kevin

Loyola College (Autonomous)
Department of Physics-Shift II
Loyola Astronomy and Rocketry Club (LARC)

Invited Talk On Where Do We Get Matters From?

Date: 12.09.2024
Plave: YD Hall

Attendance Sheet - 2 Year's

S.No.	Name	Department Number	Signature
1	D. J. DRAAVID	23-UPH-227	Dravid
2	Ranjith kumar	23-UPH-226	Ranjith
3.	R. Thirupathi	23-UPH-228	R Thirupathi
4.	K. Sanjay	23-UPH-235	K. Sanjay
5.	V. D. Thamilarasu	23-UPH-240	
6.)	Kumaresh	23-UPH-225	
7.	[illegible]	23-UPH-231	
8.	Praveen. S	23-UPH-224	
9.	P.S. Ricky Alan Raj	23-UPH-202	
10	Rohith. R	23-UPH-221	
11	chandramouleeswaran	23-UPH-241	chandramouleeswaran
12	Silvacore. M	23-UPH-233	

Loyola College (Autonomous)
Department of Physics-Shift II
Loyola Astronomy and Rocketry Club (LARC)

Invited Talk On Where Do We Get Matters From?

Date: 12.09.2024
Plave: YD Hall

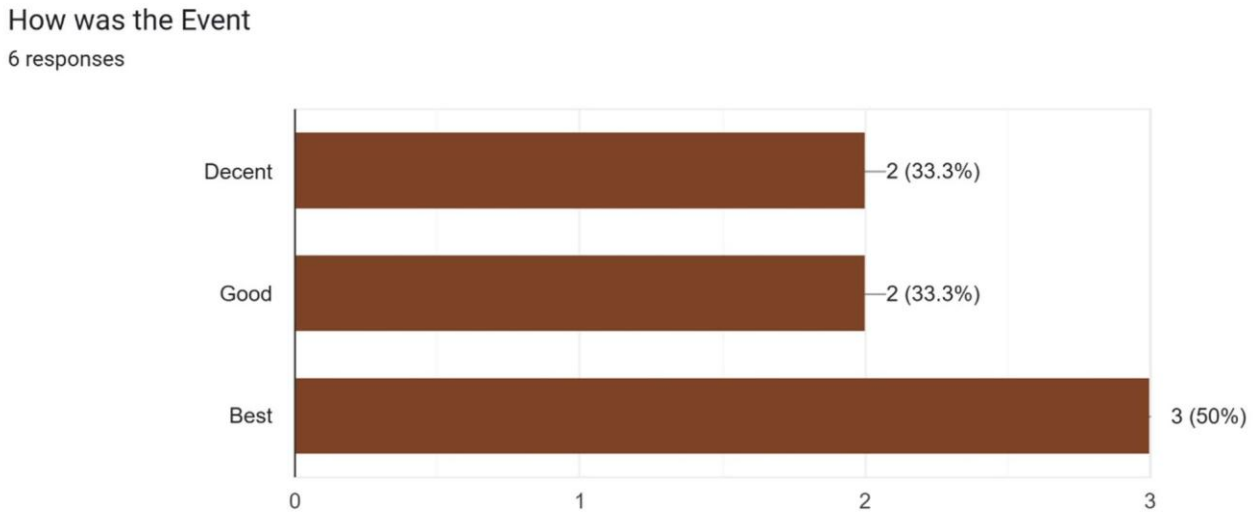
Attendance Sheet - 1st Year's

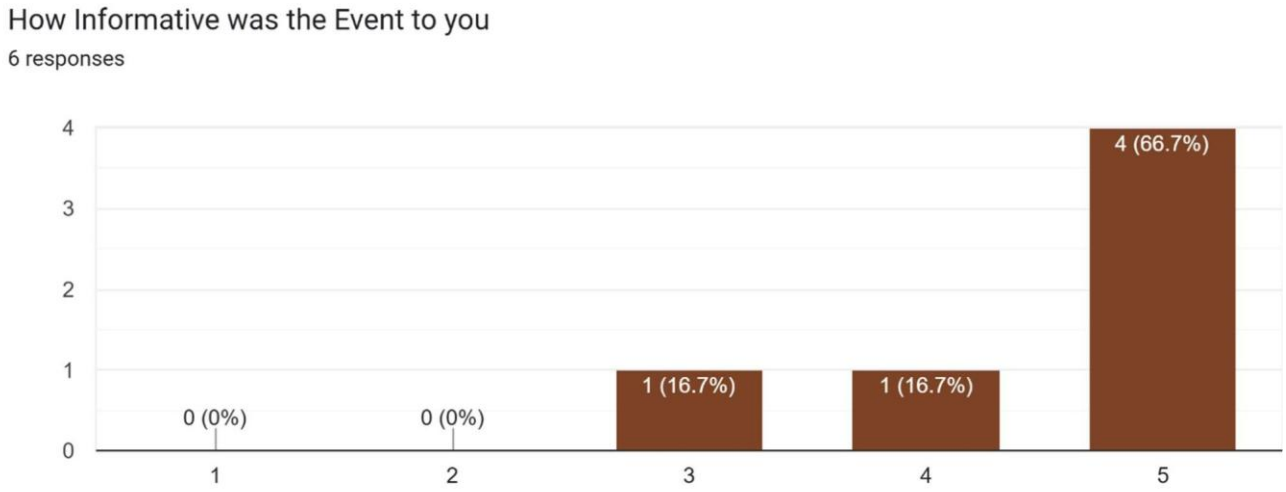
S.No.	Name	Department Number	Signature
1.	Siddharth J.S	24-UPH-204	
2.	A. Akshay	24-UPH-207	
3	S. Aadhi	24-UPH-206	
4.	S.	24-UPH-209	
5	S. Siddharth	24-UPH-205	
6	S. K. yaathish	24-UPH-211	
7	Chowdhury Christopher	24-UPH-215	
8	Sweesh	24-UPH-217	
9	Joel Dennis	24-UPH-202	Joel
10	Karthik	24-UPH-210	
11	Kailash	24-UPH-208	
12	T.M. Ambu	24-UPH-212	T.M. Ambu
13	Allwin M.J	24-UPH-213	Allwin M.J

Shift - I - Loyola

1.	C.M. Infant Nishanth		
2.	A. Rithesh	A. Rithesh	
3.	J. Solomon Jeriwin		
4.	Kishore Henry. G	G. Kishore Henry	
5.	Chaarulatha. S	Chaarulatha. S	WCE, Shift I.

Feedback :





Specific comments

- I would a lag in the relevance on the topic. I expected a topic on from where the matter actually come from and not how does the mass of the matter is accounted for. The deliverance of the lecture was good but I expected a cosmological perception of how actually matter originated.

- Like to have more number of events with reputed personalities