




***DEPARTMENTAL SEMINAR***

***A TALE OF OUR UNIVERSE***

**Dr. Tanmoy Kumar Poddar, an astroparticle physicist, currently working as a postdoctoral researcher at INFN Salerno, Italy and an alumnus of the Department of Physics, SPCMC, delivered a lecture entitled “ A Tale of Our Universe” in the online mode on 8th of June, 2025. The lecture covered neutrino physics, dark matter and gravitational waves. There was a discussion hour following the lecture session. Also the session was attended by many of our previous students.**

St. Paul's Cathedral Mission College



Department of Physics  
in collaboration with  
Alumni Association of the Department  
&  
Internal Quality Assurance Cell, SPCMC  
organises a Webinar

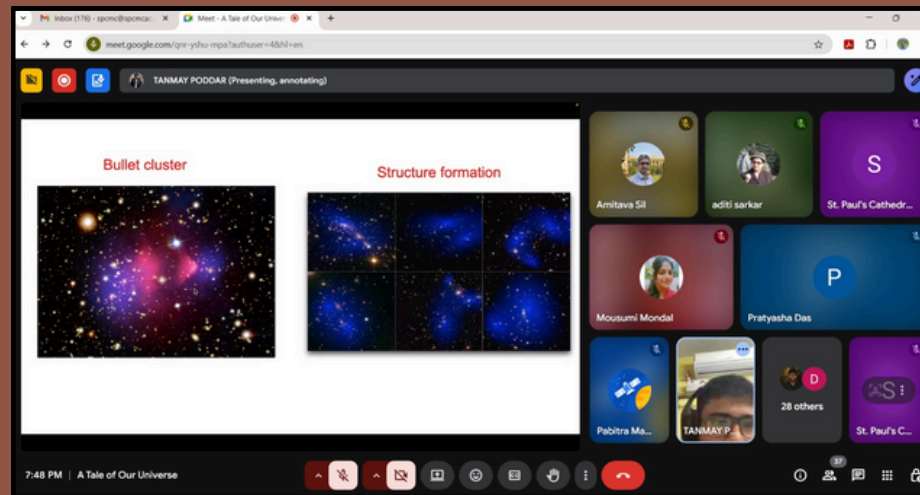
# A Tale of Our Universe

Dr. Tanmay Kumar Poddar  
Post Doctoral Fellow  
Dipartimento Di Fisica  
Istituto Nazionale di Fisica Nucleare  
Salerno, Italy

Date: 08 June, 2025  
Time: 6:30 pm (IST)

On Google Platform  
Participation by Registration Only

Link for Registration  
<https://forms.gle/9BSkrEuK2JeUhfP7>



meet.google.com/qpr-yshu-mpa?authuser=4&hl=en

TANMAY PODDAR (Presenting, annotating)

Bullet cluster

Structure formation

Amitava Sil

aditi sarkar

St. Paul's Cathedr...

Mousumi Mondal

Pratyasha Das

P

Pabitra Ma...

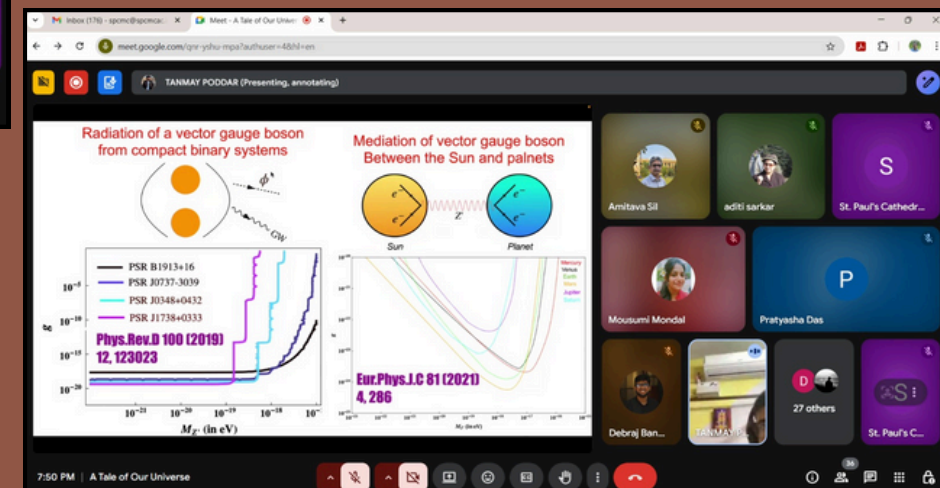
TANMAY P

28 others

St. Paul's C...

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**THE POSTER**



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TANMAY PODDAR (Presenting, annotating)

Radiation of a vector gauge boson from compact binary systems

Mediation of vector gauge boson Between the Sun and planets

PSR B 1913+16

PSR J0737-3039

PSR J0348+0432

PSR J1738+0333

Phys.Rev.D 100 (2019) 12, 123023

Sun

Planet

Eur.Phys.J.C 81 (2021) 4, 286

Amitava Sil

aditi sarkar

St. Paul's Cathedr...

Mousumi Mondal

Pratyasha Das

P

Debraj Ban...

TANMAY P

27 others

St. Paul's C...

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TANMAY PODDAR (Presenting, annotating)

**Pie chart of the Universe**

- Dark Energy: 73%
- Dark Matter: 23%
- Stars: 0.5%
- Neutrinos: 0.3%

Free Hydrogen and Helium

Heavy Elements

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TANMAY PODDAR (Presenting, annotating)

### Beyond Standard Model and Gravity

- Neutrino mass
- Matter-antimatter asymmetry
- What is dark matter?
- What is dark energy?
- Cosmological constant problem
- Grand unification
- Hierarchy problem
- Fifth force

10<sup>-14</sup> eV 10<sup>-12</sup> eV 10<sup>-10</sup> eV 10<sup>-8</sup> eV 10<sup>-6</sup> eV 10<sup>-4</sup> eV 10<sup>-2</sup> eV 10<sup>0</sup> eV 10<sup>2</sup> eV 10<sup>4</sup> eV 10<sup>6</sup> eV 10<sup>8</sup> eV 10<sup>10</sup> eV 10<sup>12</sup> eV 10<sup>14</sup> eV 10<sup>16</sup> eV

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TANMAY PODDAR (Presenting, annotating)

### Rotation curves

**Solar system**

**Galaxy**

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Google Chrome Jun 8 20:19

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Arjit TANMAY PODDAR Pabitra Mandal binita ghosh

Mousumi Mondal Pratyasha Das

Pabitra Ma... TANMAY P. 28 others St. Paul's C...

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Mahi Gupta Amitava Sil Jyotraditya misra 21 others aditi sarkar

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