



MPSTME CLUB MATHEMATICA

PI DAY WEBINAR

EVENT DESCRIPTION:

A webinar was organised by Club Mathematica on the occasion of International Pi Day. It was held on 14th March 2021; virtually on Microsoft Teams Platform from 11:00 A.M. onwards. The topic for the webinar was “Mathematics for a Better World”.

OVERVIEW:

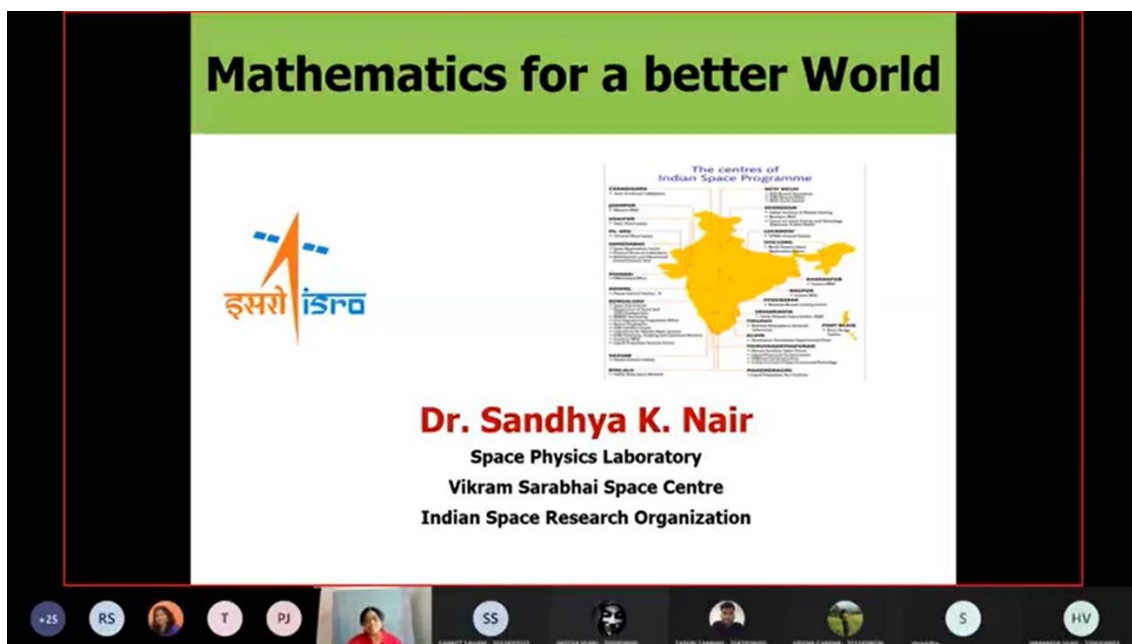
The purpose of this webinar was to give students key insights into the world of mathematics and its application in the real world. The guest speaker for the event was Dr Sandhya K Nair – a scientist & engineer at Space Physics Laboratory, VSSC, ISRO. She has the expertise of over 20 years of research in the field of atmospheric science and has also worked in research areas like atmospheric aerosols, clouds, radiation, ionosphere thermosphere system, satellite remote sensing, planetary energy budget. She is also a journal reviewer and payload developer.

The purpose of this event was well achieved. The speaker not only explained the importance of mathematics but also described the application of mathematics in aerospace and satellite deployment and monitoring. She also talked about the whole process of ISRO’s Satellite navigation system.

The webinar was followed by a short, interactive question-answer session after which our faculty mentor, Dr Minirani proposed a vote of thanks to the speaker on behalf of Club Mathematica and MPSTME.

The event was attended by over 80 students.

EVENT PICTURES:





Weather, TV & Comm. (24 h) 150km – 7.8km/s – 87.49min	Scientific, LEO (1½ h) 150km – 7.8km/s – 87.49min	Earth observation (1½ h) 150km – 7.8km/s – 87.49min
 35786km – 3.075km/s – 23:56:00	 35786km – 3.075km/s – 23:56:00	 35786km – 3.075km/s – 23:56:00

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Satellite Navigation - Basic Concept

The **3D Trilateration** Method is used to find the **Position & Time** with the help of minimum **4 satellites**

One can draw a sphere with the Satellite at the Center and radius equal to the distance between satellite and observer

Four such spheres drawn with the satellite at the centre will intersect at the point where the observer is positioned.

THE DOT ON EARTH Gets Longitude Latitude Altitude & Time

More satellites means more accuracy

The receiver will get signal from min 4 satellites to compute the position & time

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Mathematics for a better world

➤ Designing better weather forecast and climate models

Set of equations that describe atmosphere

Account temperature, pressure, humidity and General circulation models

➤ Super computers

Mathematics make computer more powerful

➤ Making the most of renewable energy sources

By choosing optimal location

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SS

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Would you like to be part of ISRO?

Is sky the limit?



IIST Vallamala, Trivandrum

B.Tech. (AEROSPACE ENGINEERING)

B.Tech. (AVIONICS)

B.Tech. (PHYSICAL SCIENCES)

Technician

Technical Assistant

Scientist/ Engineer

Industrial Training Institute

Polytechnic College

Engineering/ Science Institutes

Options are also available in various administrative wings of ISRO

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HV



Radiative Transfer Equation

$$\mu \frac{dL_{\lambda}(\tau, \mu, \phi)}{d\tau} = L_{\lambda}(\tau, \mu, \phi) - J_{\lambda}(\tau, \mu, \phi)$$
$$L_{\lambda}(0; \mu, \phi) = L_{\lambda}(\tau_c; \mu, \phi) e^{-\tau_c/\mu} + \int_0^{\tau_c} J_{\lambda}(\tau'; \mu, \phi) e^{-\tau'/\mu} \frac{d\tau'}{\mu}$$
$$J(\tau; \mu, \phi) = \frac{\beta_{scf}}{4\pi} \int_0^{2\pi} \int_{-1}^1 I(\tau; \mu, \phi) I(\tau, \mu, \phi, \mu, \phi) \chi dl d\phi + \frac{\beta_{scf}}{4\pi} \pi I_0(\tau, \mu, \phi, \mu, \phi) e^{-\tau'/\mu}$$


ACKNOWLEDGEMENTS:

We are grateful to our faculty mentors Dr Minirani S and Dr Mahesh Naik for their guidance and their instrumental role in Pi Day Webinar's success.

We are also grateful to the management of MPSTME for their unflinching support and coordination.