



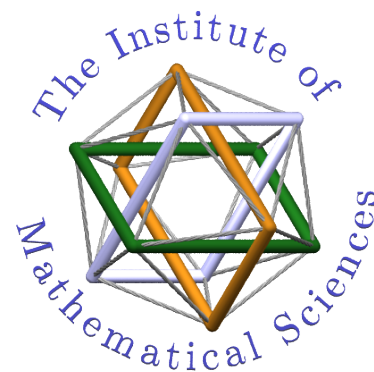
# International Day of Women and Girls in Science

Institute of Mathematical Sciences

<http://www.imsc.res.in>

Ramanujan Auditorium

11th February 2017



09:00 - 09:30	Registration	
09:30 - 10:00	<a href="#">Manjari Bagchi</a> , IMSc	Twinkle, twinkle little stars; Yes, we know what they are!
10:00 - 10:30	Varuni P, IMSc	Chatting in Bacterial Communities
10:30 - 11:00	Nandita Jayaraj, <a href="#">TLoS</a>	My Year With 50 Fantastic Scientists
11:00 - 11:30	Tea & Snacks	
11:30 - 12:00	<a href="#">Shweta Agarwal</a> , IITM	Cryptography
12:00 - 12:30	<a href="#">Sushmita V</a> , IMSc	Surface area of sphere: a 2000 year old proof
12:30 - 13:00	<a href="#">D. Indumathi</a> , IMSc	Physics
13:00 - 14:00	Lunch	
14:00 - 15:30	Science Activity & Discussion	IMSc Students
15:30 - 16:00	Tea & Snacks	
16:00 - 17:00	Movie	

Please register your school [here](#).\*

\*due to limited space, we request that each school selects 5 girls from class VIII - XII to attend the program

Manjari Bagchi, IMSc

# Twinkle, twinkle little stars; yes, we know what they are!



Celestial objects visible in the sky always lead to wonders. After centuries of careful studies, we know many things about those objects - we know that there are other planets, asteroids, comets, etc. in our solar system, there are many stars and planets around them beyond our solar system, there are many galaxies like our own Milky Way. We also know how stars are born, how they evolve, and how they die - and how they remain non-ignorable even after their death. We can even test theories of gravity, particle physics, condense matter, etc. by studying stars.

However, still there are some phenomena that we do not understand. So there is enough scope to become nature's mystery solver by being an astrophysicist. Especially, India is going to play a big role in research in astrophysics in the future.

Varuni P, IMSc

# Chatting in Bacterial Communities



Although only about  $1\mu\text{m}$  in size, a single bacterium is capable of quite complex decision-making through chemical and physical signals. One of the more fascinating mechanisms is quorum sensing, where bacteria communicate with each other through small secreted molecules, called autoinducers, to can make complex decisions as communities. They can coordinate and synchronize their behavior to correlate with population size. Almost all known bacteria seem to be capable of such communication and are able to control a wide range of phenomena, from virulence to light production, through quorum sensing.

Nandita Jayaraj, TLoS

## My Year With 50 Fantastic Scientists



Research is about humans trying to understand the ways of nature. It's hard and long work but requires a lot of creativity, instincts and imagination. What kind of science are scientists in India doing today? I spent the last year travelling the country and meeting some women scientists to find out. I found out that in research, there are no set rules for success, no fixed work timings, and lots of unpredictability. There are moments of suspense, thrill, disappointment, realisation and if you're lucky, a Eureka or two! What's struck me during my interviews is that these emotions come not only from their experience in the labs but from conference panels, government policies, field studies and even their own homes. During this talk, I'll tell you some stories of the scientific work being done by a selected few of the women I met and of the kinds of challenges they had overcome to get to the place they are today.

Shweta Agarwal, IITM

## Cryptography



Sushmita V, IMSc

# Surface area of sphere: a 2000 year old proof



Archimedes asked his kinsmen and friends to place over the grave where he should be buried a cylinder enclosing a sphere, with an inscription giving the proportion by which the containing solid exceeds the contained – this was the work he was most proud of. Archimedes calculated the surface area and volume of the sphere two thousand years ago, with methods that were precursors to modern integral calculus. We discuss his proof in this talk.

D. Indumathi, IMSc

# Physics

