Karnatak University, Dharwad

(NAAC Accredited with "A" Grade 2022)

ε-Club in the Department of Physics & Electronics

and

Dr. M.R.Gorbal Foundation, Bangalore

Cordially invite you to the 3rd Dr. M R Gorbal Foundation Guest Lecture

on

Living Matter and Matter Brought to Life

By

Prof. Sriram Ramaswamy

Fellow of the Royal Society, London

Honorary Professor and J. C. Bose National Fellow
Department of Physics
Indian Institute of Science, Bengaluru

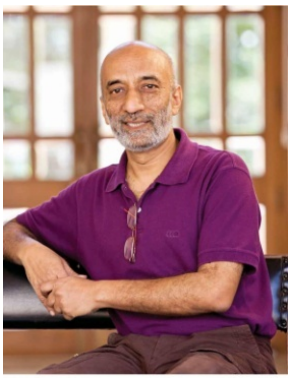
Date: 28-02-2024, Time: 10.30 AM

Venue: S. Chandrasekhar Hall, Dept. of Physics.

Shri. Ramesh Gorbal
President
Dr. M R Gorbal Foundation

Prof. R. F. Bhajantri
Chairman
Dept of Physics & Electronics

Prof. Sriram Ramaswamy is a theoretician with broad interests in nonequilibrium, soft-matter and biological physics. His research helped found the field of Active Matter, which studies the collective behavior of objects, such as motile organisms, that convert local energy input into autonomous motion. He is widely known for formulating the hydrodynamic equations governing the alignment, flow, mechanics and statistical properties of suspensions of self-propelled creatures, on scales from a cell to the ocean. Key predictions that macroscopically aligned flocks of swimming bacteria are impossible, and that the addition of swimmers to a fluid can make the viscosity arbitrarily small -have been confirmed in recent experiments. His insight into nonliving imitations of self-propulsion has led to design principles for chemotactic colloids, the first experiments observing giant number fluctuations in flocks, and the creation of flocks with a tiny minority of motile constituents. From 2012 to 2016 Sriram directed the TIFR Centre for Interdisciplinary Sciences in Hyderabad. Among the awards he has received for his research are the Shanti Swarup Bhatnagar Prize (2000) and the Infosys Prize (2011).



Abstract of the talk: A molecule or a tiny impurity in a glass of water and a bacterium swimming in the same water both move around randomly on long time-scales. We will see how different these seemingly similar random walks really are. You will have heard in school about states of matter such as gas, liquid and solid, and maybe a couple of others. He will talk a bit about the state of matter we spend most of our waking hours staring at these days, and what it might have to do with schools of fish. Living things move autonomously, signal, sense, and respond. Their interactions aren't mutual - A can attract B which repels A. He will present some surprisingly simple ways of re-creating such behaviours, as well as large-scale phenomena such as flocking, in non-living matter. All of this forms part of our research on Active Matter, our way of bringing living, metabolising matter into the fold of Condensed Matter Physics.

Dr. M R Gorbal Foundation, Bangalore:

Dr. M. R. Gorbal served the Department of Physics, Karnatak University for over 35 years as Professor and Chairman. He published several notable papers and guided several research scholars. To commemorate and honor his service and legacy, the Dr. M R Gorbal Foundation was established in the year 2022, with a view to advancing scientific research. The Foundation has signed MoU with Karnatak University on 18/01/2023 to support research scholars with fellowship and sponsor lectures by eminent scientists in the Department of Physics, at Karnatak University, Dharwad.

Previous Invited Special Lectures

1) **Prof. S Umapathy, FNA**
   Professor, IISc, Bangalore, Former Director, IISER, Bhopal,
2) **Dr. Girish Manjunath Gouda**
   Indian Space Research Organization (ISRO), Bengaluru

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