

X-RAY AND MICROWAVE COSMOLOGY WITH GALAXY CLUSTERS

Public Lecture by
Professor Rashid Sunyaev
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Thursday, March 14, 2019 at 5:00 pm
Venue - Homi Bhabha Auditorium , TIFR, Mumbai

Our Universe is filled by cosmic microwave background radiation which is extremely isotropic and has a blackbody spectrum with temperature 2.7 Kelvin. 50 years ago, my mentor Yakov Zeldovich and I predicted the presence of "shadows" in the microwave sky in the directions of clusters of galaxies. The galaxy clusters contain thousands of galaxies each, a lot of dark matter, and hot gas filling their huge gravitational potential and are the most massive collapsed objects in the Universe. Russia plans to launch, in June 2019, SRG spacecraft with German eRosita X-Ray telescope having grazing incidence optics. This telescope will discover more than 100,000 galaxy clusters. I will talk about what the observations of X-ray light and microwave shadows with SRG/eRosita spacecraft and the ground based microwave telescopes on the South Pole and the Atacama desert at 5km altitude will reveal about the galaxy clusters and our Universe.



Rashid Sunyaev was the Director (1996-2017) and is now Director-Emeritus of the Max-Planck Institute for Astrophysics, Garching. He is a Chief Scientist in the Space Research Institute (IKI) of the Russian Academy of Sciences and Maureen and John Hendricks visiting professor of the Institute for Advanced Study, Princeton. He has made fundamental contributions to diverse areas of astrophysics including cosmic microwave background, accretion disks around black holes and neutron stars and X-ray astrophysics. At present, he is leading Russian scientists in the joint Russian-German SRG mission. He has been the Foreign Associate of USA National Academy of Sciences (1991), Full Member of the Russian Academy of Sciences (1992), Member of the German National Academy of Sciences "Leopoldina" (2004), and the Foreign Member of the Royal Society (2009). His awards and honours include the Gold Medal of the Royal Astronomical Society (1995), Catherine Bruce Gold Medal (2000), Gruber Cosmology Prize (2003), Crafoord Prize in Astronomy (2008), Karl Schwarzschild Medal (2008), Kyoto Prize (2011), Benjamin Franklin Medal in Physics (2012), Einstein Professorship of the Chinese Academy of Sciences (2014), Yakov Zeldovich Gold Medal of Russian Academy of Sciences (2015) and the State Prize of Russia for Science and Technology (2017).

Talk is open to all. Non TIFR members are requested to carry valid photo ID card.

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