Berliner Physikalisches Kolloquium

im Magnus-Haus, Am Kupfergraben 7, 10117 Berlin

Eine gemeinsame Veranstaltung der Physikalischen Gesellschaft zu Berlin e.V. (PGzB), der Freien Universität Berlin (FUB), der Humboldt-Universität zu Berlin (HUB), der Technischen Universität Berlin (TUB) und der Universität Potsdam (UP), gefördert durch die Wilhelm und Else Heraeus-Stiftung.

Am Donnerstag, dem **17. Januar 2013, um 18:30 Uhr**

spricht

Prof. Dr. Rashid Sunyaev

Max-Planck-Institut für Astrophysik, Garching,
Space Research Institute, Moscow, Russia,
and Institute for Advanced Study, Princeton, USA

über das Thema

„Hot intergalactic gas in clusters of galaxies, cosmic microwave background radiation, and cosmology“

Moderation: Dieter Breitschwerdt (TU Berlin)

Clusters of galaxies are the most massive objects in our universe. Each of them contains dark matter, thousands of galaxies, and is filled with hot intergalactic gas radiating x-rays. An unusual method to detect clusters of galaxies is possible due to the presence of extremely isotropic Cosmic Microwave Background (CMB) radiation filling our universe. The interaction of hot electrons with CMB photons changes the CMB spectrum in the directions toward clusters of galaxies. As a result, clusters become “negative sources” of radiation in the cm and mm spectral bands. The brightness and spectrum of these sources does not depend on the distance or redshift. This opens the way to detect all clusters of galaxies (more than 100,000) in the observable universe.
The Planck Surveyor spacecraft, the ground-based South Pole Telescope, and the Atacama Cosmology Telescope discovered recently more than a thousand of extremely massive clusters of galaxies at different redshifts looking for such “negative sources” on the microwave sky. They are providing us with unique data on properties of our universe as a whole, about its past and even its future, and give us clues on the physics working under the conditions and scales which we cannot test in the ground based laboratories