

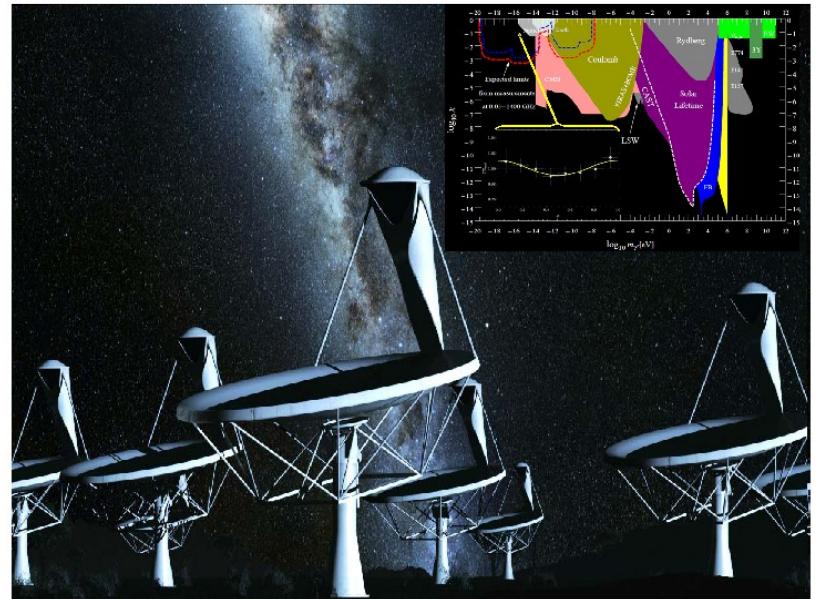


Fundamental Physics with Radio Astronomical Observations.

Andrei P. Lobanov (MPIfR / Bonn)

Tuesday, 29 November 2011, 16:00 h
DESY Auditorium

Radio astronomy embraces a number of effective experimental approaches in fundamental physical studies, often covering ranges of the parameter space which are unique and highly complementary to those explored in laboratory experiments. The most celebrated cases include cosmic microwave background measurements, tests of general relativity, detection of gravitational waves, and studies of dark matter and variability of fundamental constants. The next generation of radio telescopes will increase, by factors of 10--1000, the sensitivity, frequency range, and time and spectral resolution of radio astronomical measurements. These advances would uncover exciting new potentials in several areas of research, in particular in searches for weakly interacting particles and probing extreme vicinity of the event horizon scale in cosmic objects. This will enable probing hidden photons with masses as low as 10^{-19} eV, detecting the axion-photon conversion down to couplings of $\sim 10^{-12}$ GeV $^{-1}$ and providing direct and indirect evidence for existence of the event horizon. This talk will be focused on giving a brief summary of the recent results and research prospects in these fields, presenting a tentative detection of an oscillatory signal observed in radio spectra of supernova remnants that can be reconciled with a signal from photon-photon oscillations.



- ❖ Coffee, tea and cookies will be served at 15:45h
- ❖ After the seminar there is a chance for private discussions with the speaker over soft drinks and pretzels