



Physical Research Laboratory, Ahmedabad

Special Colloquium 16-09

Speaker: Prof. Samir Mathur
Ohio State University, Columbus, USA

Title: "Resolution of the black hole information paradox"

Time: Tuesday, 5 July 2016, 16.00 hrs.

Venue: K. R. Ramanathan Auditorium, PRL

Abstract

Some 40 years ago Hawking found a remarkable contradiction: if we accept the standard behaviour of gravity in regions of low curvature, then the evolution of black holes will violate quantum mechanics. Resolving this paradox would require a basic change in our understanding of spacetime and/or quantum theory. This paradox has found an interesting resolution through string theory. While quantum gravity is normally expected to be important only at very small distances of order the Planck length, the situation changes when a large number N of particles are involved, as for instance in the situation where we make a large black hole. Then the length scale of quantum gravity effects grows with N , altering the black hole structure to a "fuzzball"; this effect resolves the paradox.

The Speaker

Prof. Samir Mathur has been on the faculty of Ohio State University (OSU), Columbus, USA since 1999. After obtaining his Ph.D. at TIFR, Mumbai in 1987 he was a post-doctoral fellow at TIFR and Harvard University, and was then on the faculty of Massachusetts Institute of Technology (MIT) from 1991-1999. His area of research is string theory and quantum gravity and he has spent over two decades working on the black hole information paradox. He has received awards for his teaching at OSU, and was a recipient of the Indian National Science Academy (INSA) S. N. Bose Young Scientist Award in 1984. He is currently visiting IIT Gandhinagar under the MHRD funded GIAN (Global Initiatives of Academic Networks) Program.

Tea at 15:30 hrs.

ALL ARE WELCOME

