Bindusar Sahoo

Research Summary:

I have worked on two problems in the academic year 2006-2007 which are as follows:

1) α'-Corrections to Extremal Dyonic Black Holes in Heterotic String Theory. This work was done in collaboration with Ashoke Sen. In this paper we worked out the black hole entropy for heterotic string theory compactified on T^6 or $K3 \times T^2$ by taking into account all the tree level four derivative terms and found proper matching with earlier results both for supersymmetric as well as non-supersymmetric black holes.

2) AdS_3, Black Holes and Higher Derivative Corrections. This work was done in collaboration with Justin David and Ashoke Sen. In this work we used ADS/CFT to prove that a 3 dimension supergravity theory having (0,4) supersymmetry cannot receive any further higher derivative corrections apart from the terms which can be removed by field redefinition. Then we used this result and invariance of Walds formula under field redefinition to argue the non-renormalizability of black hole entropy of a BTZ black hole in three dimensional supergravity with (0,4) supersymmetry

Publications:

1. Bindusar Sahoo and Ashoke Sen, *α'-Corrections to Extremal Dyonic Black Holes in Heterotic String Theory,* JHEP **0701**, 010, (2007)

Preprints:

1. Justin R. David, Bindusar Sahoo and Ashoke Sen, *AdS_3, Black Holes and Higher Derivative Corrections ,* arXiv:0705.0735

Conference/Workshops Attended:

1. *Informal Workshop on String theory, HRI, Allahabad* , India, December 2006
2. *Indian Strings Meeting, Toshali Sands, Puri*, India, December 2006.
3. *International Workshop on Theoretical High Energy Physics, IIT Roorkee*, India, March 2007
4. *IPM String School and Workshop, Tehran*, Iran, April 2007

Invited Lectures/Seminars:

1. *Role of Chern Simons terms in Black Hole Entropy*, Indian Strings Meeting, Jointly organized by the Indian String theory community, Puri, December 2006.

2. *Non-Supersymmetric Extremal Black Holes in Curvature squared N=2 Supergravity* , IWTHEP'07, IIT Roorkee, Roorkee, March 2007.

Other Activities:

1. Attended the Advanced Strings School held at the Institute of Physics, Bhubaneswar, October, 2006.

2. Gave a talk on "AdS_3, Black holes and Higher derivative corrections", as a part of the requirement of the Graduate programme, April, 2007.