

# Seminar

Friday 20 July, 2007

11 am - Room 701

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***Extremal Black Holes in 4D Gauss-Bonnet Gravity***

We show that a four-dimensional Einstein-Maxwell-Dilaton-Gauss-Bonnet gravity admits asymptotically flat black hole solutions with a degenerate event horizon of the Reissner-Nordström type  $AdS_2 \times S^2$ . Such black holes exist for the dilaton coupling constant within the interval  $0 \leq a^2 < a_{cr}^2$ . Black holes must be endowed with an electric charge and (possibly) with magnetic charge (dyons) but they cannot be purely magnetic. Purely electric solutions are constructed numerically and the critical dilaton coupling is determined to be  $a_{cr} \leq 0.48821970$ . For each value of the dilaton coupling  $a$  within this interval and for a fixed value of the Gauss-Bonnet coupling  $\alpha$  we have a family of black holes parameterized by their electric charge. Relation between the mass, the electric charge and the dilaton charge at both ends of the allowed interval of  $a$  is reminiscent of the BPS (Bogomolny-Prasad-Summerfield) condition for dilaton black holes in the Einstein-Maxwell-Dilaton theory. The entropy of the DGB extremal black holes is twice the Bekenstein-Hawking entropy.

***All Welcome***

**Contact Details**

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