Institut Henri Poincaré

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String Theory in Greater Paris

Rencontres Théoriciennes

“Supergravité, théorie des cordes et théorie M”

Jeudi 22 Mai 2025, 10:00

Pierre Heidmann

Brane-Antibrane Bound States and the Microstructure of Nonextremal Black Holes

I will present a new class of brane-antibrane bound states in type IIB string theory. These configurations appear as regular bound states of two Strominger- Vafa black holes, one BPS and one anti-BPS, held apart by a regular topological structure. In the neutral, asymptotically flat case, I will show that these solutions capture atypical microstates of the Schwarzschild black hole, accounting for half of its entropy. This provides a concrete microscopic realization of Schwarzschild entropy in terms of branes and antibranes. I will then consider the AdS3 embedding, where these bound states form a large, discrete family of non-BPS states with a quantized energy spectrum determined entirely by the number of antibranes and antimomenta. I will show that regular solutions exist with energy below the CFT mass gap and discuss their physical properties and implications.

Institut Henri Poincaré, salle 314, 3ème étage