Differential Geometry Seminar

Organized by Professor Shing-Tung Yau

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New results in numerical relativity

Tuesday, March 10, 2009
1:30 - 3:00 pm
Science Center, Room 507

Abstract:

We review the formulation that led to a breakthrough in numerical relativity and finally allowed, after three decades, to stably evolve binary black holes for many orbits. We discuss some of its implications to mathematical relativity and astrophysics: The orbital ‘hung-up’ effect and the cosmic censorship conjecture. The discovery of the large recoil velocities (up to 4000 km/s) acquired by the merger remnant of two spinning black holes and its astrophysical consequences. The space-time characterization of the final black hole and the ‘no-hair’ theorem. Generic binary black hole configurations and the evolution of three (and N) black holes.