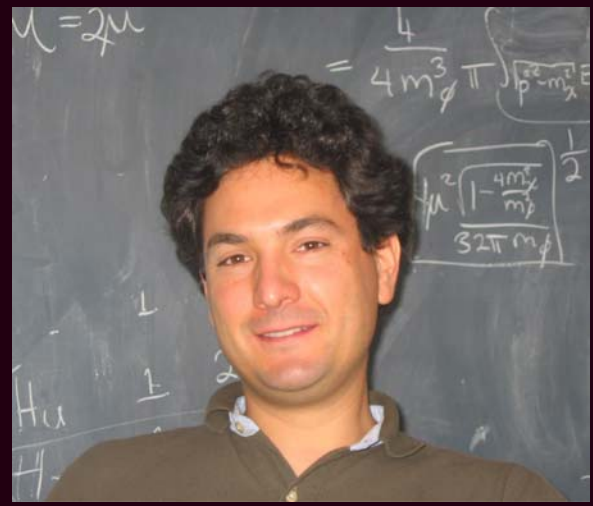
Physics Colloquium
Monday January 23rd, 2006
4:15 PM 428 Pupin Hall
Professor Guy Moore
of McGill University

"Plasma instabilities in Quantum Chromodynamics?"

Ordinary plasmas, under inhomogeneous nonequilibrium conditions, rather generically display plasma instabilities. In particular, the Weibel (filamentary) instability leads to the rapid development of strong magnetic fields in a plasma. Quantum chromodynamics, the theory of the strong interactions which bind together the constituents of protons and neutrons, is structurally similar to electrodynamics. Does it also display plasma instabilities? I discuss this question in the context of heavy ion collisions, such as those conducted at RHIC. QCD should display plasma instabilities at weak coupling (possibly relevant in heavy ion collisions), but the additional complications of the theory mean that their behavior is very different than in conventional electrodynamics. I explore and discuss these similarities and differences.



Host: Professor Christ