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HOLOGRAPHIC INTERPOLATION AND SCHROEDER'S EQUATION

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Time evolution is formulated and discussed in the framework of Schroeder's functional conjugacy equation. The proposed method yields smooth, continuous dynamics –without the prior need for local propagation equations. The resulting holographic functional methods are then applied as probes of discrete time-stepped maps that lead to chaotic behavior. The methods provide continuous-time interpolation between the time steps, thereby revealing the maps to be splintered Hamiltonian systems underlain by novel potentials. A sequence of successively deepening switch-back potentials for a particle driven by Hamiltonian dynamics explains, in physical terms, the frequency doubling and trajectory folding that occur on the particular route to chaos revealed by the logistic map, $x \mapsto 4x(1 - x)$.

Date: Thursday, July 22, 2010

Time: 15:00

Place: IMBM Seminar Room