

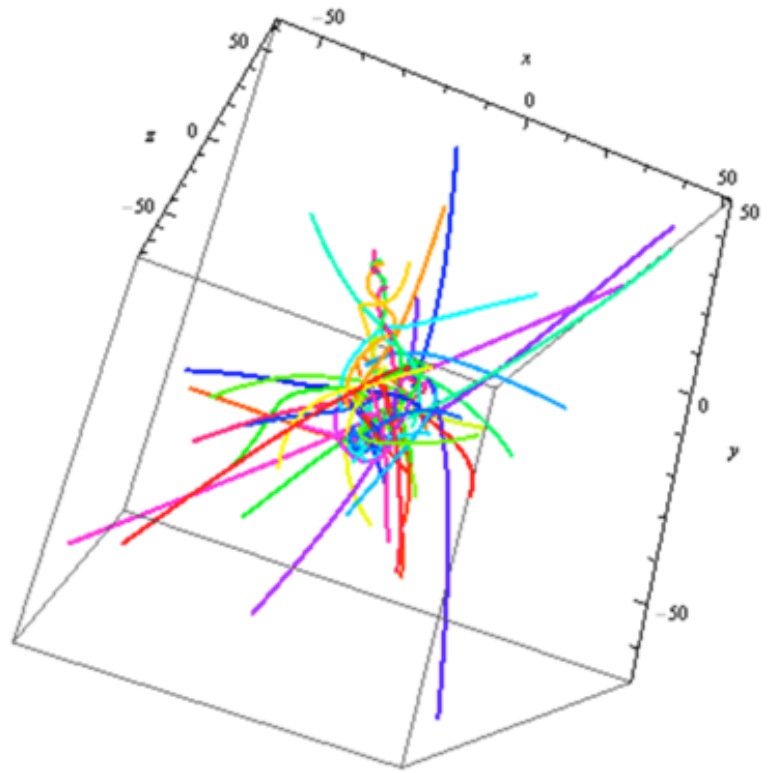
Physics Department Seminar

3pm February 16, 2015, Physical Sciences room 105

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Shape Space and the Arrow of Time



The nature of time is one of the fundamental questions in high energy theoretical physics today, and will perhaps prove to be critical in discovering a consistent theory of quantum gravity. The leading quantum gravity contender is string theory, but it faces many difficulties and has made little progress in the past 20 years. An alternative approach, Shape Dynamics, has been proposed by Dr. Julian Barbour based on the Machian principles of relational dynamics. In this

talk I will describe the historical and philosophical foundations of relational dynamics and the fundamental principles of Shape Space. We will then look at some specific numerical calculations used by myself and student collaborators at Cal Poly - San Luis Obispo to apply the principles of relational dynamics to N-body gravitational systems. Our results suggest a possible alternative to the conventional understanding of a thermodynamic arrow of time.