



Friends of the Kavli Institute for Theoretical Physics

Chalk Talk

What Do Climate Modeling and Quantum Mechanics Have in Common?

What do climate change and quantum mechanics have in common? Computer simulation is an essential approach for each, but both suffer from the same seemingly insurmountable obstacle: straightforward algorithms require exponentially large computer resources. For climate change, the origin is chaos, which makes the tiniest errors huge over time. For quantum mechanics, the origin is the huge number of dimensions needed to describe a many particle quantum system. Overcoming these obstacles requires clever algorithms. One of the most powerful approaches, the Monte Carlo method, can be applied to both climate simulation and quantum mechanics. In this talk I'll start with the basic ideas of chaos and quantum mechanics, and proceed to how one simulates them, what the problems are, and how they can be overcome. A highlight will be a home movie where I demonstrate the idea of chaos at a pool table.

Wednesday, October 17, 2012

Kohn Hall, UCSB

5:30 pm Courtyard Reception

6:15-7 pm Presentation

7-7:15 pm Q & A

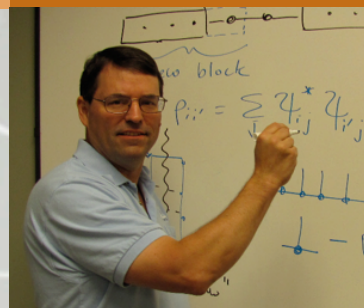
Attendance by Reservation Only

RSVP by October 12 to

events@kitp.ucsb.edu or 805-893-6371

Lot 10 parking

As you enter campus from Hwy 217, turn right onto Mesa Rd, merge into left lane, at the stop light turn left into Parking Structure 10. Park, buy a \$4 permit from the dispenser (near the elevator and stairs), display permit on dashboard. The KITP is right next door.



Steven R. White

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Steven R. White is a Professor of Physics at the University of California, Irvine. White is the Winner of the 2003 Aneesur Rahman Prize in Computational Physics and is widely known as the inventor of the density matrix renormalization group that is one of the most powerful methods for simulating quantum mechanics.