



istanbul matematiksel bilimler merkezi  
istanbul center for mathematical sciences

## GEOMETRY-TOPOLOGY AND PHYSICS SEMINARS

by

Andrew Waldron

University of California-Davis

### WEYL INVARIANCE AND THE ORIGINS OF MASS

Weyl invariance can be used as a principle for constructing not only conformally invariant massless theories, but also massive, partially massless and gauge invariant ones. We present a “Tractor Calculus” for describing Weyl invariance coming from methods in conformal geometry. We use this calculus to give new descriptions of a range of fundamental physical theories. A pedagogical introduction to all these ideas will be given.

**Date:** Friday, April 10, 2009

**Time:** 14:00

**Place:** IMBM Seminar Room

### BRST DETOUR QUANTIZATION

We explain how to obtain familiar operators of differential geometry and theoretical physics by quantizing the motions of particles moving in the manifold in question. Using BRST techniques (or equivalently Super Lie Algebra cohomology) for the algebras obeyed by these operators, we show how to obtain gauge invariant, physical, wave equations. The basic ideas behind the quantized worldline formalism will also be presented.

**Date:** Saturday, April 11, 2009

**Time:** 10:30

**Place:** IMBM Seminar Room