

# Geometry and Topology Seminar

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**Monday, October 7, 2013**

**2:00p.m., HH3017**

*Standing on the shoulders of geometers: the string curved propagation model.*

## **Abstract:**

The original sigma-model of Gell-Mann and Levy was a field theory toy model for describing the low-energy interactions of pi-mesons. The interest for geometers arises because it is a theory where the scalar fields take values in a manifold. Moreover, string theorists have in them a playground for the propagation of the string (or brane) on a curved manifold, and in this sense the Wess-Zumino-Witten models were born. Geometrically, these are group manifolds which, by virtue of being parallelisable, serve to fulfil the  $\beta$  equation for the non-linear sigma model, which when applied to strings contains chiral symmetries. I will discuss how to obtain classes of solutions to chiral, conformally-invariant models using the machinery of three- and four-dimensional Lie groups admitting left-invariant metrics and a left-invariant Wess-Zumino coupling. These are interesting from the point of view of integrable field theories, which however I shall not be talking about, since I do not know anything about the topic.