Karin Melnick* (karin.melnick@yale.edu), CT, and Charles Frances. Conformal actions of nilpotent Lie groups on compact Lorentz manifolds. Preliminary report.

Any compact Riemannian manifold with noncompact conformal group is conformally equivalent to the round sphere, by a celebrated theorem of Lelong-Ferrand. The Lorentzian Lichnerowicz conjecture asserts that a compact Lorentz manifold for which the conformal group does not preserve any Lorentz metric in the conformal class is conformally flat. I will present a bound on the degree of a connected nilpotent group of conformal automorphisms of a compact Lorentz manifold consistent with this conjecture. Further, if the maximal degree is attained, then a nonempty open subset of the manifold is conformally flat. Our results hold more generally for compact pseudo-Riemannian manifolds. This is joint work with Charles Frances. (Received September 19, 2007)