Normal forms for conformal vector fields on pseudo-Riemannian manifolds

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Abstract:

Isometries of a Riemannian or pseudo-Riemannian manifold fixing a point are conjugate to their differential via the exponential map. No such linearization exists in general for conformal transformations fixing a point. The main theorem of this talk asserts that on a real-analytic Lorentzian manifold M, any conformal vector field vanishing at a point has linearizable flow, or M is conformally flat. This result leads to a normal form for any such vector field near its singularity. (Joint work with Charles Frances.)