Zimmer's embedding theorem for tractor solutions and conformal actions of simple groups on closed pseudo-Riemannian manifolds

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Zimmer's embedding theorem concerns actions of connected Lie groups by automorphisms of differential-geometric structures and has yielded important restrictions on which groups can act on a manifold with a given structure. It has a useful version for Cartan geometries which generalizes rather easily to tractor solutions on parabolic-type geometries. Tractor solutions are parallel sections of associated vector bundles for connections which can encode a very wide array of geometric PDEs. An application for the conformal-to-Einstein tractor connection is a rigidity theorem for conformal actions of SU(p',q') on closed (p,q)-pseudo-Riemannian manifolds in the real-analytic setting: 2p' <= p+1 and if 2p'=p+1, then the metric is conformally flat. This is work in progress with K. Neusser.

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