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Towards a classification of supersymmetric spacetimes

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In this talk, we present a deformation theoretic approach to classifying supersymmetric spacetimes.

It is a postulate of general relativity that spacetime is described by a four-dimensional Lorentzian manifold. However, it is not always convenient to use this description. For example, it may be easier to take the Newtonian limit and work with theories at lower energies. These non-relativistic spacetimes are still useful descriptions and should be incorporated in our classification.

To this end, we notice that the above postulate has an important consequence: the spacetime manifold is fully described by its relativity group. Therefore, we do not ask for manifolds whose relativity group is the Poincaré group, but for geometries with some relativity group. We will show that these groups may be described by kinematical Lie algebras and give the classification of these algebras. We then show how this programme is being extended to the supersymmetric case.

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