

# Prolongation on contact manifolds

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Prolongation is a classical technique used to explore the consequences of a system of PDE. In interesting examples, the PDE in question are closely tied to some geometric structure on the underlying manifold. The Killing equations or conformal Killing equations on a vector field provide classical examples in Riemannian geometry. In these cases, the general theory of prolongation (due to Goldschmidt, Spencer, and others) is perfectly suited to give the best possible constraints on the solution space. But sometimes it is desirable to modify the prolongation procedure itself in order better to take account of the underlying geometry. In CR geometry, for example, one should bear in mind and utilise the natural contact structure. The aim of this talk is briefly to present classical prolongation (especially on conformal manifolds) from the point of view of connections and then to explain how this theory should be modified on contact manifolds. The main ingredients are differential geometry and Lie theory. This is joint work with Rod Gover.