

# **Reduction, reconstruction and un-reduction of dynamical systems with symmetries**

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When a dynamical system possesses a symmetry group, it can be reduced to a system on a quotient manifold. In this talk, I will outline a few aspects of the reduction and reconstruction of solutions. Next, I will consider a process which is often called 'un-reduction'. Here one associates (for example) to a geodesic equation on a manifold a dynamical system on a principal bundle over that manifold (i.e. an "un-reduced system"), in such a way that solutions of the latter project.