Meeting: 1005, Newark, Delaware, SS 12A, Special Session on Geometric Analysis

1005-53-74 **Andrew Dancer**, Jesus College, Oxford University, OX1 3DW Oxford, England, and **McKenzie Yuen-Kong Wang*** (wang@mcmaster.ca), Department of Mathematics and Statistics, McMaster University, Hamilton, Ontario L8S 4K1, Canada. *Superpotentials and the cohomogeneity one Einstein equations.* Preliminary report.

The Einstein equation for a Riemannian metric of cohomogeneity one can be related to a constrained Hamiltonian system on the cotangent bundle of the space of G-invariant metrics on the principal orbit. A superpotential is a globally defined function on the configuration space whose gradient gives a Lagrangian section of the cotangent bundle such that the Hamiltonian vector field is tangent to it.

I will discuss the problem of classifying which principal orbits G/K admit superpotentials and present some new and old examples of superpotentials. (Received January 27, 2005)