1048-22-107   **Ryad A Ghanam*** (`ghanam@pitt.edu`), 150 Finoli Dr, Department of Mathematics, University of Pittsburgh at Greensburg, Greensburg, PA 15601. *Representations of Low Dimensional Lie Algebras and Applications.*

In this talk I will report on the progress of the problem of finding linear representations for low-dimensional real Lie algebras. For each Lie algebra of dimension less than or equal to 6, I will give a matrix Lie group whose Lie algebra is the given algebra in the list. I will also report on the progress of finding representations for the 7-dimensional real nilpotent Lie algebras. As an application, I will show how to use these representations to solve the inverse problem of Lagrangian mechanics for the canonical connection on Lie groups. (Received January 31, 2009)