Title: Bäcklund Transformations for Darboux Integrable Differential Systems

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Abstract: Lie symmetry reduction is typically viewed as an integration method for differential systems of finite type, that is, systems of ordinary differential equations. In this talk I shall present two new, recent applications of Lie symmetry reduction to the geometric study of partial differential equations. The first gives a remarkably simple method for constructing Bäcklund transformations. The second also gives a simple, yet completely general method for constructing Darboux integrable equations. The combination of these result in a new method for constructing Bäcklund transformations for Darboux integrable equations. The utility of this group theoretic approach will be illustrated by a variety of novel examples.