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Jeanne N. Clelland*, Department of Mathematics, 395 UCB, University of Colorado, Boulder, CO 80309-0395, and **Christopher G. Moseley** and **George R. Wilkens**. *Geometry of sub-Finsler Engel manifolds*.

A *sub-Riemannian Engel manifold* consists of a 4-manifold X , a 2-plane field $D \subset TX$ with the property that $[D, D]$ has rank 3 everywhere and $[D, [D, D]] = TX$, and a Riemannian metric on each 2-plane D . Many aspects of the geometry of sub-Riemannian Engel manifolds have been described by C. Moseley. In this talk, we introduce the notion of a *sub-Finsler Engel manifold*, in which the Riemannian metric on each 2-plane D is replaced by a Finsler metric. We will explain why this is a natural generalization from the point of view of control theory, discuss how the geometry differs from the sub-Riemannian case, and consider examples. (Received August 27, 2005)