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**Roman Smirnov\*** ([Roman.Smirnov@dal.ca](mailto:Roman.Smirnov@dal.ca)), Department of Mathematics and Statistics,  
Dalhousie University, Halifax, Ontario B3H 3J5, Canada. *Geometric Invariant Theory on Killing  
Tensors.*

Known as generalized symmetries in classical and quantum mechanics Killing tensors defined on pseudo-Riemannian spaces of constant curvature also form solution spaces of overdetermined systems of PDEs. As such they can be naturally studied from the viewpoint of invariant theory under the action of an appropriate Lie group of transformations. I will discuss the applicability of this approach based on such well-established techniques as the method of moving frames, infinitesimal method, analysis of the orbits, etc as well as its natural connection with the Hamilton-Jacobi theory of orthogonal separation of variables where the Killing tensors of valence two play a pivotal role. (Received August 30, 2005)