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*Invariant Classification of Killing Tensors on the Sphere*

In recent years, a method for classifying the orthogonally separable coordinate systems for the Hamilton–Jacobi equation has been developed. This method uses invariants of the vector space of Killing tensors under the action of the isometry group. It has been applied to spaces of constant curvature, including  $E^2$ ,  $E^3$ ,  $M^2$  and  $S^2$ . This talk focuses on the invariant classification for  $S^2$ , along with an alternative classification based on an eigenvalue approach. In addition, if time permits, results for  $S^3$  and  $S^n$  will also be discussed.

This is joint work with Ray McLenaghan and Roman Smirnov.