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Positive weighted sectional curvature

We propose a new generalization of positive sectional curvature we call positive weighted sectional curvature, which depends on the choice of a smooth vector field on a Riemannian manifold. The definition is motivated by the corresponding notion of Ricci curvature for manifolds with density which was developed by Bakry-Emery and their collaborators. We show that many basic results for positive curvature also hold for positive weighted curvature. For example, positive weighted curvature is preserved by Riemannian submersions and Synge-type theorems hold. We also show that topological classification results of Grove-Searle and Wilking on compact manifolds of high symmetry rank and positive curvature can be generalized to positive weighted curvature. This is joint work with Lee Kennard of UCSB.