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Paul Goodey, Markus Kiderlen and Wolfgang Weil* (weil@math.uka.de), University of Karlsruhe, Institute of Algebra and Geometry, 76128 Karlsruhe, Germany. *Weighted Projection Means of Convex Bodies*. Preliminary report.

The k -th *projection mean body* $P_k(K)$ of a convex body $K \subset \mathbb{R}^d$ is the Minkowski average of the projections $P_L(K)$ of K onto all k -dimensional subspaces L in \mathbb{R}^d . The operator $K \mapsto P_k(K)$ has been studied by various authors (Schneider, Spriestersbach, Goodey, Jiang, Kiderlen), its injectivity behavior is still not known completely. As a variant, we introduce the k -th *m -weighted projection mean body* $P_{k,m}(K)$ of K by replacing the orthogonal projection $P_L(K)$ by a weighted projection $P_{L,m}(K)$, $m > -k$, where $P_k(K) = P_{k,\infty}(K)$. Kiderlen (1999) showed that $K \mapsto P_{k,1-k}(K)$ is injective. Here, we settle two further cases by showing that $K \mapsto P_{k,1}(K)$ and $K \mapsto P_{k,2}(K)$ are injective. This follows from more general results on spherical projections and liftings. (Received February 26, 2007)