Mathematics > Algebraic Topology

Extensions of theorems of Rattray and Makeev

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We consider extensions of the Rattray theorem and two Makeev's theorems, showing that they hold true for several maps, measures, or functions simultaneously, if we consider orthonormal k-frames in $\mathbb{R}^n$ instead of orthonormal bases (full frames).
We also present new results on simultaneous partition of several measures into parts by k mutually orthogonal hyperplanes.
In the case when $k=2$ we relate the Rattray and Makeev type results to the well-known embedding problem for projective spaces.

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