PROCESSES OF FLATS INDUCED BY HIGHER DIMENSIONAL PROCESSES III

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Abstract

Stationary processes of k-flats in $\mathbb{E}^d$ can be thought of as point processes on the Grassmannian $\mathcal{L}^d_k$ of k-dimensional subspaces of $\mathbb{E}^d$. If such a process is sampled by a $(d-k+j)$-dimensional space F, it induces a process of j-flats in F. In this work we will investigate the possibility of determining the original k-process from knowledge of the intensity measures of the induced j-processes. We will see that this is impossible precisely when $1 < k < d-1$ and $j = 0, \dots, 2\left[\frac{r}{2}\right] - 1$, where r is the rank of the manifold $\mathcal{L}^d_k$. We will show how the problem is equivalent to the study of the kernel of various integral transforms, these will then be investigated using harmonic analysis on Grassmannian manifolds.