

ON THE CARRYING DIMENSION OF OCCUPATION MEASURES FOR
SELF-AFFINE RANDOM FIELDS

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Abstract: Hausdorff dimension results are a classical topic in the study of path properties of random fields. This article presents an alternative approach to Hausdorff dimension results for the sample functions of a large class of self-affine random fields. The aim is to demonstrate the following interesting relation to a series of articles by U. Zähle (1984, 1988, 1990, 1991). Under natural regularity assumptions, we prove that the Hausdorff dimension of the graph of self-affine fields coincides with the carrying dimension of the corresponding self-affine random occupation measure introduced by U. Zähle. As a remarkable consequence we obtain a general formula for the Hausdorff dimension given by means of the singular value function.

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