

SAMPLING AND RECONSTRUCTION OF SURFACES AND HIGHER DIMENSIONAL MANIFOLDS

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ABSTRACT. We present a new sampling theorem for surfaces and higher dimensional manifolds. The core of the proof resides in triangulation results for manifolds with boundary, not necessarily bounded. The proposed method adopts a geometric approach that is considered in the context of 2-dimensional manifolds (i.e surfaces). Further, our approach and formalism lend themselves too the derivation of a geometric theorem for non-uniform sampling of one-dimensional signals compatible with the classical Shannon-Whittaker theorem. The new approach is also considered in the context of image processing.

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