

# PSWF-Radon approach to reconstruction from band-limited Hankel transform

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## Abstract

We give new formulas for reconstructions from band-limited Hankel transform of integer or half-integer order. Our formulas rely on the PSWF-Radon approach to super-resolution in multidimensional Fourier analysis. This approach consists of combining the theory of classical one-dimensional prolate spheroidal wave functions with the Radon transform theory. We also use the relation between Fourier and Hankel transforms and Cormack-type inversion of the Radon transform. Our numerical examples illustrate super-resolution even with a considerable noise.

**Keywords:** Hankel transform, Fourier transform, Radon transform, prolate spheroidal wave functions, super-resolution

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