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**An Analog of the Paley-Wiener Theorem  
for Entire Functions of the Space  $W_\sigma^p$ ,  $1 < p < 2$ ,  
and some Applications**

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**Abstract.** We obtain an analogue of the well-known Paley-Wiener Theorem on integral representation of entire functions of exponential type at most  $\sigma$ ,  $\sigma > 0$ , which belong to the space  $L^2(\mathbb{R})$ . We choose  $1 < p < 2$  and  $\sigma > 0$  and work in  $L^p(\mathbb{R})$ . We find optimal estimates of the modulus on any line parallel to  $\mathbb{R}$ , and present applications to best analytic continuation from a finite set in  $\mathbb{C}$  for entire functions of this class. The main result was announced in [7].

**Keywords.** Entire functions of exponential type, integral representation, optimal estimates, Fourier transform, Fourier series, extrapolation from a finite set.

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