1133-42-73 **Eric S Weber*** (esweber@iastate.edu), Department of Mathematics, 396 Carver Hall, 411 Morrill Road, Ames, IA 50011. *A Paley-Wiener Type Theorem for Singular Measures on* $\mathbb{T}$. Preliminary report.

The classical Paley-Wiener theorem says that an entire function of exponential type at most π whose restriction to the real axis is square-integrable is the Fourier transform of a function in $L^2(-1/2, 1/2)$. We consider the following analogue: for a fixed singular measure μ on $[-1/2, 1/2]$, when is an entire function the Fourier transform of a function in $L^2(\mu)$? We give a complete characterization of such entire functions in terms of the Fourier transform of μ as well as the Cauchy transform of μ. While the characterization is very different from the classical case–it does not involve any integrability conditions–we show that by reinterpreting the Paley-Wiener theorem, our characterization is in fact analogous. (Received July 11, 2017)