1172-42-175 **Adel Faridani*** (faridani@oregonstate.edu) and **Hussain Al-Hammali**. *Sampling theorems for bandlimited functions of polynomial growth.*

We consider sampling theorems for π-bandlimited functions f of polynomial growth. For N an integer let $B_{\pi,N}$ denote the space of functions f with bandwidth at most π such that $f(x)(1+|x|)^{-N}$ is square integrable. We equip $B_{\pi,N}$ with the inner product $\langle f,g\rangle = \int_{-\infty}^{\infty} f(x)\overline{g(x)}(1+x^2)^{-N}dx$. For $N=0$ one obtains the well-known Paley-Wiener space. Our sampling theorems are based on complete interpolating sequences for the Paley-Wiener space. For positive N the space $B_{\pi,N}$ contains functions of polynomial growth and N additional samples are required compared to the Paley-Wiener space. These additional samples may be values of the function itself or of its derivatives. For negative N the functions in $B_{\pi,N}$ decay more rapidly and require $|N|$ fewer samples. We also explore $B_{\pi,N}$ as a reproducing kernel Hilbert space and give explicit formulas for the reproducing kernel for some values of N. (Received August 26, 2021)