1163-46-1616 **Aqeeb A Sabree*** (`sabreea@xavier.edu`), 108 Hinkle Hall, Xavier University, Cincinnati, OH 45207. *Positive Definite Kernels, Harmonic Analysis, and Boundary Spaces: Drury-Arveson Theory, and Related.*

A reproducing kernel Hilbert space (RKHS), $\mathcal{H} \subset \mathcal{F}(X, \mathbb{C})$, is a Hilbert function space where the values $f(x)$, for $f \in \mathcal{H}, x \in X$, are reproduced from the inner product $< \cdot, \cdot >_{\mathcal{H}}$:

$$f(x) = < f(\cdot), k_x(\cdot) >_{\mathcal{H}}, \quad \text{where } k_x \in \mathcal{H}.$$

In this setting, we have an explicit correspondence between reproducing kernel Hilbert spaces and reproducing kernel functions—also called positive definite functions. My research studies the duality between positive definite functions and their boundary spaces for specific RKHSs. We will define these notions and cover an overview of the subject area. Ultimately, this presentation will provide the audience with a look at applications of RKHSs to harmonic analysis, signal/image analysis, mathematical physics, and machine learning algorithms. (Received September 15, 2020)