1137-47-57 **Boo Rim Choe**, **Hyungwoon Koo** and **Wayne Smith*** (wayne@math.hawaii.edu), Department of Mathematics, University of Hawaii, Honolulu, HI 96822. *Sarason's composition operator over the half-plane.*

Let $\mathbf{H} = \{z \in \mathbf{C} : \operatorname{Im} z > 0\}$ be the upper half plane, and denote by $L^p(\mathbf{R})$, $1 \leq p < \infty$, the usual Lebesgue space of functions on the real line $\mathbf{R}$. We define two "composition operators" acting on $L^p(\mathbf{R})$ induced by a Borel function $\varphi : \mathbf{R} \to \overline{\mathbf{H}}$, by first taking either the Poisson or Borel extension of $f \in L^p(\mathbf{R})$ to a function on $\overline{\mathbf{H}}$, then composing with φ and taking vertical limits. Classical composition operators, induced by holomorphic functions and acting on the Hardy spaces $H^p(\mathbf{H})$ of holomorphic functions, correspond to a special case. Our main results provide characterizations of when the operators we introduce are bounded or compact on $L^p(\mathbf{R})$, $1 \leq p < \infty$. The characterization for the case $1 < p < \infty$ is independent of p and the same for the Poisson and the Borel extensions. The case $p = 1$ is quite different. (Received January 22, 2018)