A Double Triangle Operator Algebra From ${SL}_2(\mathbb{R}_+)$

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Abstract. We consider the $w^*$-closed operator algebra $\mathcal{A}_+$ generated by the image of the semigroup $SL_2(\mathbb{R}_+)$ under a unitary representation $\rho$ of $SL_2(\mathbb{R})$ on the Hilbert space $L^2(\mathbb{R})$. We show that $\mathcal{A}_+$ is a reflexive operator algebra and $\mathcal{A}_+ = \text{Alg} \mathcal{D}$ where $\mathcal{D}$ is a double triangle subspace lattice. Surprisingly, $\mathcal{A}_+$ is also generated as a $w^*$-closed algebra by the image under $\rho$ of a strict subsemigroup of $SL_2(\mathbb{R}_+)$.