

Completely bounded approximation property of semigroup crossed products

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Abstract. In this paper, we study the CBAP of the reduced semigroup crossed product $\mathcal{A} \rtimes_{\alpha,r} P$ for a quasi-lattice ordered group (G, P) . We prove that if G is amenable and $\mathcal{A}$ has the CBAP, then $\mathcal{A} \rtimes_{\alpha,r} P$ has the CBAP with the same Haagerup constant. We relate the CBAP of $\mathcal{A} \rtimes_{\alpha,r} P$ with an approximation property for completely bounded kernels over P . When P is right Ore, we introduce and characterise the weak amenability of P as the CBAP of the reduced semigroup C^* -algebra with respect to the canonical tracial state and the linear space of finitely supported functions on $P \times P$.

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