

The closure of the smallest ideal of an ultrafilter semigroup

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Let S be a discrete semigroup, let βS be the Stone-Čech compactification of S , and let T be a closed subsemigroup of βS . We characterize ultrafilters from the smallest ideal $K(T)$ of T and from its closure $\text{cl } K(T)$. We show that, for a large class of closed subsemigroups of βS , $\text{cl } K(T)$ is not an ideal of T . This class includes the subsemigroups $0^+ \subset \beta \mathbb{R}_d$ and $\mathbb{H}_\kappa \subset \beta(\bigoplus_\kappa \mathbb{Z}_2)$.

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