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**Neil Hindman\*** (nhindman@aol.com). *Some new results on the algebraic structure of  $\beta S$ . Preliminary report.*

Let  $S$  be an infinite discrete semigroup and let  $\beta S$  be its Stone-Čech compactification with the operation making  $\beta S$  a compact right topological semigroup with  $S$  contained in its topological center. Some kind of cancellation assumptions are needed for several results about left ideals and right ideals in  $\beta S$ . For example,  $S^* = \beta S \setminus S$  is a left ideal of  $\beta S$  if and only if  $S$  is *weakly left cancellative* (meaning that for any  $x, y \in S$ ,  $\{z \in S : xz = y\}$  is finite). And “weakly right cancellative” is necessary, but not sufficient, for  $S^*$  to be a right ideal of  $\beta S$ .

In recent joint research with Lakeshia Legette and Dona Strauss, we established several results about the number of left and right ideals in  $\beta S$  that do not involve any cancellation assumptions. For example, we showed that if  $S$  does not contain a finite ideal, then there are at least  $2^{\mathfrak{c}}$  minimal left ideals in  $\beta S$ . I will discuss this and similar recent results. (Received December 20, 2010)