1139-05-652 **Aaron Abrams*** (abrams.aaron@gmail.com), Mathematics Department, Washington and Lee University, Lexington, VA 24450. *Some germ-maximal 1-dimensional discrete packings.* Preliminary report.

We investigate some packing problems and distance-avoiding problems in the natural numbers. For a finite set $D \subset \mathbf{N}$ (of distances), a D-avoiding set is a set $S \subseteq \mathbf{N}$ such that if $j, k \in S$ then $j - k \notin D$. J. Propp has defined a partial order on subsets of natural numbers, the *germ order*, that refines both cardinality (for finite sets) and density (in the usual sense); Propp showed that if there exists a germ-maximal D-avoiding set S, then S must be eventually periodic.

We give a collection of D's for which there is a unique germ-maximal S which in addition is periodic (including e.g. any D with $|D| = 2$). We also give examples of D for which there is a unique germ-maximal S which is not periodic; local improvements near the boundary cause only eventual periodicity. It is not known whether every D has a germ-maximal S. (Received February 20, 2018)