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Mihir Singhal* (mihirs@mit.edu). *Families with no perfect matchings.*

We consider families of k -subsets of $\{1, \dots, n\}$, where n is a multiple of k , which have no perfect matching. An equivalent condition for a family \mathcal{F} to have no perfect matching is for there to be a *blocking set*, which is a set of b elements of $\{1, \dots, n\}$ that cannot be covered by b disjoint sets in \mathcal{F} . We are specifically interested in the largest possible size of a family \mathcal{F} with no perfect matching and no blocking set of size less than b . Frankl resolved the case of families with no singleton blocking set (in other words, the $b = 2$ case) for sufficiently large n and conjectured an optimal construction for general b . Though Frankl's construction fails to be optimal for $k = 2, 3$, we show that the construction is optimal whenever $k \geq 100$ and n is sufficiently large. (Received August 27, 2020)