1125-05-2069 **Neil Lyall**, **Ákos Magyar** and **Hans Parshall*** (hans@math.uga.edu). *Spherical configurations over finite fields.*

In their 1973 paper, Erdős, Graham, Montgomery, Rothschild, Spencer, and Straus proved that every Euclidean Ramsey set is contained in some sphere, and Graham conjectures that every finite spherical set is indeed Ramsey. This conjecture remains open (and contested) even in the case of a generic four point subset of a circle. We provide evidence for Graham's conjecture by proving something stronger in the finite field setting: for any $\alpha \in (0,1)$, every $A \subseteq \mathbf{F}_q^{10}$ with $|A| \geq \alpha q^{10}$ contains an isometric copy of every four point spherical set spanning two dimensions, provided q is taken sufficiently large with respect to α. For $d \geq 2k+6$, comparable results are obtained in $\mathbf{F}_q^d$ for arbitrary $(k+2)$-point spherical configurations spanning k dimensions. (Received September 19, 2016)