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Akshat Mudgal* (amudgal@purdue.edu). *Additive energies on spheres.*

Given a real number $\lambda > 0$, we study additive energies on the sphere

$$S_\lambda = \{(x_1, x_2, x_3) \in \mathbb{R}^3 \mid x_1^2 + x_2^2 + x_3^2 = \lambda\}.$$

In particular, letting $s \geq 2$ be some natural number and letting A be some finite, non-empty subset of S_λ , we are interested in studying the number of solutions to the equation

$$\mathbf{x}_1 + \cdots + \mathbf{x}_s = \mathbf{x}_{s+1} + \cdots + \mathbf{x}_{2s},$$

such that $\mathbf{x}_1, \dots, \mathbf{x}_{2s} \in A$. This problem is connected to discrete restriction estimates for the sphere in 3 dimensions, and our results improve upon previous work of Bourgain–Demeter and Benatar–Maffucci. (Received February 15, 2021)