1125-AF-2072 **Laura K. Plunkett*** (`plunkett@hnu.edu`) and **Kyle Chapman**. *Knotting and Size in Ergodically Generated Off-Lattice Walks with Excluded Volume.*

We describe a new algorithm, the reflection method, to generate off-lattice random walks of specified, though arbitrarily large, thickness in $\mathbb{R}^3$ and present the data resulting from our implementation of this method. We use this new data to describe the complex relationship between the presence and nature of knotting and size, thickness and shape of the random walk. We extend the current understanding of excluded volume by expanding the range of analysis of how the squared radius of gyration scales with length and thickness, including an analysis of very thin walks. We also examine the profound effect of thickness on the probability of knotting in open chains, and how the distribution of knot types varies with thickness. (Received September 19, 2016)