Matrix representations of finite configurations in the Hausdorff metric space

Kelly Kuzemchak
Sinem Semsioglu

Abstract

The Hausdorff metric provides us with a way to measure the distance between sets. We investigate properties of finite configurations in the Hausdorff metric space. Of particular interest are configuration numbers, that is, the number of finite sets at a specific location between two given finite sets. We expand on the work of Steven Schlicker, et al., through which it has been found that 19 and 37 are not configuration numbers for any possible finite configuration. We further analyze configurations by representing them as binary matrices. In this way we can systematically compute possible configuration numbers. Additionally, we investigate the minimum dimension in which certain configurations can be represented.