## Steven Simon (Bard)

## Regular Polygonal and Prismatic Tverberg-Type Theorems

## Abstract for the Combinatorics Seminar 2019 March 26

The celebrated Tverberg Theorem, generalizing Radon's Theorem when q = 2, states that any T(q,d) = (q-1)(d+1)+1 points in R<sup>d</sup> can be partitioned into q pairwise disjoint sets whose convex hulls have non-empty q-fold intersection. Moreover, this "Tverberg number" T(q,d) is generically tight. We will show that in the absence of a full Tverberg partition for fewer than T(q,d) points, one can nonetheless guarantee a partition of these points into q pairwise disjoint sets so there are q points, one from each of the resulting convex hulls, which form the vertices of a regular q-gon. Analogous results hold for regular prisms when q is composite. As with Tverberg's original theorem, these results can be extended to the continuous setting when q is a prime power, and these likewise admit constrained versions: restrictions on the number of points in each of the regular polygon to the original set, ``balanced" colored versions of a Sobéron variety, and so on.

From: https://www2.math.binghamton.edu/ - Department of Mathematics and Statistics, Binghamton University

Permanent link: https://www2.math.binghamton.edu/p/seminars/comb/abstract.201903sim

Last update: 2020/01/29 19:03

×