

1014-06-1691

M p Nolte* (mpnt3c@umr.edu) and **Matt Insall**. *Generating a Finite Subset of a Lattice of Convex Sets*. Preliminary report.

In [I], it was observed that geometric arrangements of (finitely many) generators in the lattice of convex subsets in the plane (and hence of a Hilbert Space) can have a profound effect on the lattice generated. Specifically, some fairly innocuous-looking changes can lead from a situation in which the lattice generated is finite, to a situation in which the lattice so generated is infinite. We examine the example of a triangle with three finite line segments extending outward from each side. The example of the equilateral triangle will lead to the following conjecture:

Let C denote the lattice of closed convex subsets of the plane, let Δ be an equilateral triangle with sides s_1, s_2, s_3 , and let l_1, l_2, l_3 be line segments lying outside the interior of Δ , with $l_1 \cap s_1 = p_1, l_2 \cap s_2 = p_2, l_3 \cap s_3 = p_3$, such that $l_1 \perp s_1, l_2 \perp s_2$, and $l_3 \perp s_3$. Then the sublattice of C that is generated by $\{\Delta, l_1, l_2, l_3\}$ is finite.

Conditions for the generation of a finite sublattice will be discussed for an equilateral triangle and all other regular n -gons replacing the triangle.

[I] M. Insall: "Geometric Conditions for Local Finiteness of a Lattice of Convex Sets", *Mathematica Moravica*, Volume 1. 1997 (Received September 28, 2005)