1176-28-28 **Alex McDonald*** (mcdonald.996@osu.edu) and **Krystal Taylor**. *Finite point configurations in products of thick Cantor sets and a robust nonlinear Newhouse gap lemma.* Preliminary report.

Given a set E in the plane, consider chains of distances $(|x^1 - x^2|, ..., |x^k - x^{k+1}|)$ between points $x^i \in E$. A problem of great current interest is determining structural conditions on E which ensure the set of all such distance chains has positive Lebesgue measure, or more generally non-empty interior. In joint work with Krystal Taylor, we prove the set of distance chains has non-empty interior when E is a Cartesian product of sufficiently thick Cantor sets. The proof relies on the classic Newhouse Gap Lemma and builds on earlier work of Simon and Taylor. (Received January 04, 2022)