1162-05-68 **Eva Czabarka*** (czabarka@math.sc.edu), **Stephen J Smith** (sjs8@email.sc.edu) and **Laszlo A Szekely**. *An infinite antichain of planar tanglegrams.*

A tanglegram is a specific kind of graph, consisting of two rooted binary trees of the same size and a perfect matching joining their leaves. A tanglegram layouts is a straight line drawing of the two trees as plane trees such that the leaves are on two parallel lines, and the matching edges are the only ones that can cross.The tangle crossing number of a tanglegram is the minimum crossing number among its layouts. The tanglegram is planar, if it has a layout without crossings.

Tanglegrams play a major role in phylogenetics, especially in the theory of cospeciation. The first binary tree is the phylogenetic tree of hosts, while the second binary tree is the phylogenetic tree of their parasites, e.g. gopher and louse. The matching connects the host with its parasite. The tanglegram crossing number has been related to the number of times parasites switched hosts, or, working with gene trees instead of phylogenetic trees, to the number of horizontal gene transfers.

Here we show that he induced subtanglegram partial order is not a well-quasi-ordering by exhibiting an infinite antichain of planar tanglegrams. (Received August 23, 2020)