

On the order dimension of locally countable partial orderings

Steffen Lempp, University of Wisconsin-Madison

The *order dimension* of a partial order $(P, <)$ is the smallest number of linearizations of $<$ that intersect to $<$.

We present work on and related to our result that the order dimension of any locally countable partial ordering $(P, <)$ of size κ^+ , for any κ of uncountable cofinality, is at most κ .

In particular, this implies that it is consistent with ZFC that the dimension of the Turing degrees under partial ordering can be strictly less than the continuum. We also characterize the order dimension of the Muchnik degrees and partially that of the Medvedev degrees.

This is joint work with Kojiro Higuchi, Dilip Raghavan, and Frank Stephan.