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Posets with Planar Cover Graphs

For nearly 50 years, my favorite research topic has been combinatorial problems for posets. Often, but not always, there are analogous problems in graph theory, but the poset versions are typically more challenging. A great example is bounding chromatic number and dimension in terms of maximum degree.

In the last five years, there has been increasing attention paid to problems that bound the dimension of a poset in terms of the largest standard example it contains. The analogous problem in graph theory is bounding chromatic number in terms of maximum clique size. Of course, in the most general setting, there is no such bound, but researchers have found many interesting classes where one can be shown to exist.

For posets, it has been conjectured for more than 40 years that dimension is bounded in terms of the largest standard example for posets with planar cover graphs, and there has been a sequence of results that hold promise to providing a pathway to the final resolution of the conjecture. Surveying these results will be the primary focus of this talk.