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Composed Partitions of a Set, With Gain Graphs

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A **composed partition** of a set *V* is a partition of *V* in which each block has a **composition** (an ordered partition) into subblocks. In a *k*-composed partition (sometimes unhappily called a ``generalized partition''), the composition may have empty subblocks, but not more than *k*-1 in a row. The composed and ordinary partitions of a set, like the ordinary partitions, form a geometric lattice (which means they have a nice geometrical representation). The composed partitions of all subsets of a set form a different and even more interesting geometric lattice.

Composed partitions arise from examples of additive gain graphs with symmetric, integral gains. I will explain these gain graphs and how they lead to composed partitions.

This talk will not assume any knowledge of my previous talk, "Perpendicular Dissections of Euclidean Space, With Gain Graphs".