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Combinatorial generation via permutation languages

In this talk I present a new and versatile algorithmic framework for generating different classes of combinatorial objects by encoding them as permutations. One of the main applications are pattern-avoiding permutations. Our algorithm provides a unified view on many known results, such as the Steinhaus-Johnson-Trotter algorithm for permutations, the binary reflected Gray code for bitstrings, the Lucas-Roelants-van Baronaigien Gray code for binary trees, Kaye's Gray code for set partitions, and it also yields many new Gray codes, in particular for several classes of rectangulations, also known as floorplans.

Joint work with Liz Hartung, Hung P. Hoang and Aaron Williams.