Applications of noncrossing partitions to quantum groups

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A powerful connection between compact quantum groups and the combinatorics of partitions has emerged in the last decade and is developing rapidly. I will introduce this connection and show three application involving the special class of noncrossing partitions, which is the best understood. The first one will be the computation of the fusion rules of free quantum groups, the second one the study of asymptotic properties of the Haar state and the last one the proof that the Connes embedding conjecture has a positive answer for quantum permutation groups.