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Coloured shuffle compatibility and Hadamard products

In this talk I will present recent work on coloured shuffle compatibility of permutation statistics and its applications to zeta functions in algebra. I will discuss how we extended recent work of Gessel and Zhuang, introducing shuffle algebras associated with coloured permutation statistics. Our shuffle algebras provide a natural framework for studying Hadamard products of certain rational generating functions. As an application, we will see how to explicitly compute such products in the context of so-called class- and orbit-counting zeta functions of direct products of suitable groups. This is joint work with V. D. Moustakas and T. Rossmann.