Detecting singularities of Schubert varieties with permutation patterns

Henning Ulfarsson   Reykjavik University

We prove new connections between permutation patterns and singularities of Schubert varieties, by giving a new characterization of factorial and Gorenstein varieties in terms of so called bivincular patterns. These are generalizations of classical patterns where conditions are placed on the location of an occurrence in a permutation, as well as on the values in the occurrence. This clarifies what happens when the requirement of smoothness is weakened to factoriality and further to Gorensteinness, extending work of Bousquet-Mélou and Butler (2007), and Woo and Yong (2006).