

What makes hyperplane arrangements free?

Hiroaki Terao (Tokyo Metropolitan University)

`hterao@comp.metro-u.ac.jp`

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Although the free arrangements were introduced more than twenty years ago, they are still somewhat mysterious. Recently algebraic/differential geometric techniques were applied to get a quite intriguing sufficient and necessary condition for a hyperplane arrangement to be free. The condition remains valid over any field. As an application, M. Yoshinaga proved the Edelman-Reiner conjecture for the extended Shi/Catalan arrangements. In this talk, I will discuss how much we can say at this moment about what makes hyperplane arrangements free.