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A Rational Coordinatization of the Georges Configuration

The Georges graph is a bipartite, non-hamiltonian, 3-connected, 3-regular graph on 50 vertices with girth 6. An n_3 configuration consists of a set of n points and n lines such that each line is incident on 3 points, and each point is incident on 3 lines. The Georges graph can be viewed as the incidence graph of a 25_3 configuration, called the Georges configuration, introduced by Grunbaum. An n_3 configuration has a coordinatization over a field K , if the points can be assigned coordinates (x, y) , where x and y are in K , such that the lines are then given by linear equations.

In general, it is difficult to determine whether a given n_3 configuration has a coordinatization. Grunbaum has conjectured that an n_3 configuration which has a coordinatization over the reals also has a coordinatization over the rationals. Recently he proved that the Georges configuration has a coordinatization over the reals. I have since found a rational coordinatization of the Georges configuration. The method of constructing a coordinatizing polynomial and its application to the Georges configuration will be presented.