General position stresses

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Equilibrium stresses and the associated equilibrium stress matrices play an important role in the study of global rigidity of frameworks and graphs. Given a fixed framework (G, p) in dimension d, its equilibrium stresses form a linear space. The *stress variety* of G then arises by letting p vary over all d-dimensional configurations and recording the stresses.

Recent universality results of Panina suggest that, in general, stress varieties can be very complicated. However, in applications around universal rigidity it is often enough to consider the subset of equilibrium stresses that have maximum rank and satisfy a certain "general position" assumption. By making a connection with orthogonal representations of graphs, we can show that the set of "general position stresses" of a graph is irreducible and compute its dimension.

This is joint work with R. Connelly and S. J. Gortler.

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