Favorite Inductive Construction

Herman Servatius
The 2-sum

\[ M_1 \bigoplus_2 M_2 \]

\[ M_1 \cap M_2 = \{e\} \]

Circuits:

Circuits of \( M_1 - \{e\} \)

Circuits of \( M_2 - \{e\} \)

\((C_1 - e) \cup (C_2 - \{e\})\)
The 2-sum of two frameworks

The 2-sum of two circuits.
Note that the 2-sum of two cycles is a cycle.
2-connected but not 3-connected graphs

The 3-block tree
The 3-blocks of a rigidity matroid may not be rigidity matroids

The rigidity matroid is not closed under 2-sum decomposition.
Universal rigidity and framework connectivity

$G = (V, E; p)$ universally rigid, 2-connected but not 3-connected. At most one of the the lobes lie along the affine span of the two separator.
An \textit{l-Form} universally rigid graph
A \textit{b-Form} universally rigid graph