## Matroid Theory Tutorials: (5) Higher Connectivity

## Homework

**HW 1.** Let M be a k-connected matroid of at least 2k - 1 elements. Show that M does not contain a set X of size at most k such that X is both a circuit and a cocircuit.

**HW 2.** Let M be k-connected matroid and (X, Y) be a Tutte k-separation of M such that |X| = k. Show that X is an independent cocircuit or coindependent circuit (i.e., circuit in M and independent in the dual of M).