1135-05-2749 **Hsien-Chih Chang*** (hchang17@illinois.edu), **Axel Brandt** (axbrandt@davidson.edu), **Tanya Jeffries** (neferzippy@gmail.com), **Sarah Loeb** (sarah1347@gmail.com) and **Marcus Schaefer** (mschaefer@cdm.depaul.edu). *On Local Crossing Numbers of Complete Graphs and Hypercubes.* Preliminary report.

The local crossing number of a graph is the smallest number k required to draw the graph in which every edge is crossed at most k times. Such notion has been proven useful in the graph drawing community in pursuing a definition suited to model graphs that are closed to planar, as well as a tool to understand other related graph parameters.

In this talk, we report some progress on local crossing numbers, followed by discussion and future directions. Specifically,

1. Deciding the local crossing numbers of complete graphs is hard in general even for complete graphs; we prove that for complete graph on 8 vertices the value is 3. The upper bound comes from explicit construction and the lower bound follows from a case-by-case analysis.

2. We provide upper and lower bounds on the local crossing numbers of the hypercubes. The upper bound comes from a recursive construction; as for lower bound we use the graph-embedding strategy similar to the one for (standard) crossing numbers on sparse graphs with good expansion properties. Our bounds are tight up to logarithmic factors.

This is a joint work with Axel Brandt, Tanya Jeffries, Sarah Loeb, and Marcus Schaefer. The research was conducted during the MRC workshop "Beyond Planarity: Crossing Numbers of Graphs" in June 2017. (Received September 26, 2017)