

Mathematics faculty members and a visualization of their research areas

Methodology:

- (1) We create a weighted graph $G = (V_1, E_1, w_1)$ with $V_1 :=$ research areas where the weights $w_1(u, v)$ are proportional to the number of faculty members that have shared interests in u, v
- (2) Then we compute an embedding that approximately minimizes the weighted number of crossings and weighted squared edge lengths while nodes repel each other.
- (3) Then we extend the graph to $G_2 = (V_1 \cup V_2, E_2, w_2)$ where $V_2 :=$ faculty members are connected to their primary, secondary, tertiary areas with edges of weight 1, 1/2, 1/4, resp. Finally we compute an embedding minimizing the weighted squared edge lengths while nodes repel each other.

Meaning of colors:

hired since 2014

mid career faculty

at least 37 years since PhD

recent departures

— primary research area

--- secondary research area

■ 1 PhD student in 2010-2020

■ 1 Postdoc in 2011-2020

Diagram A

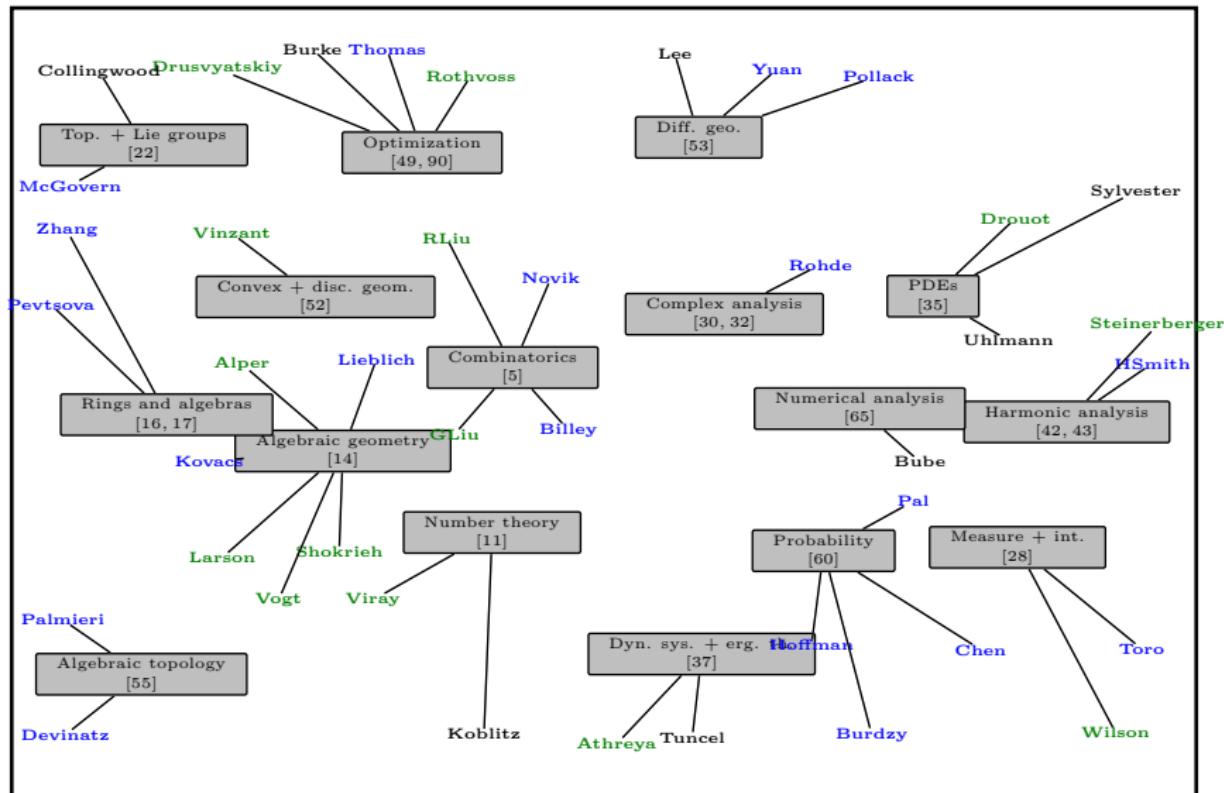
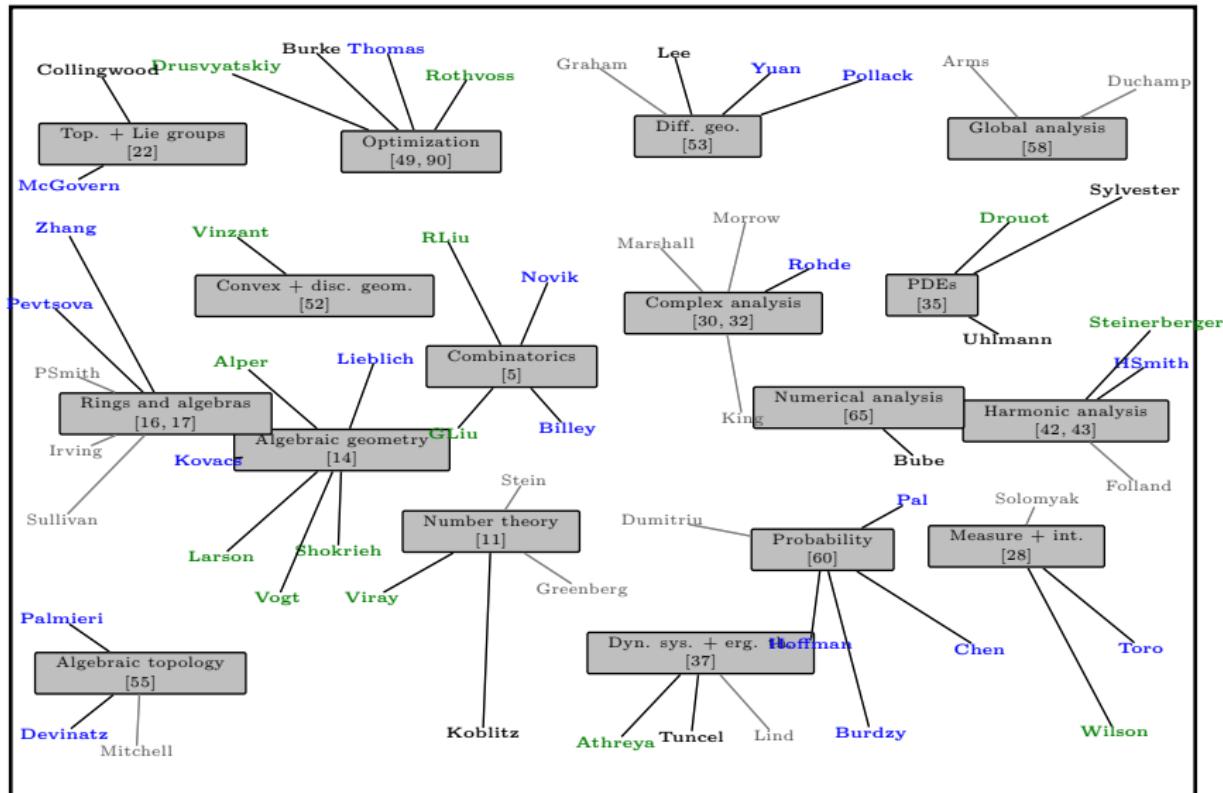
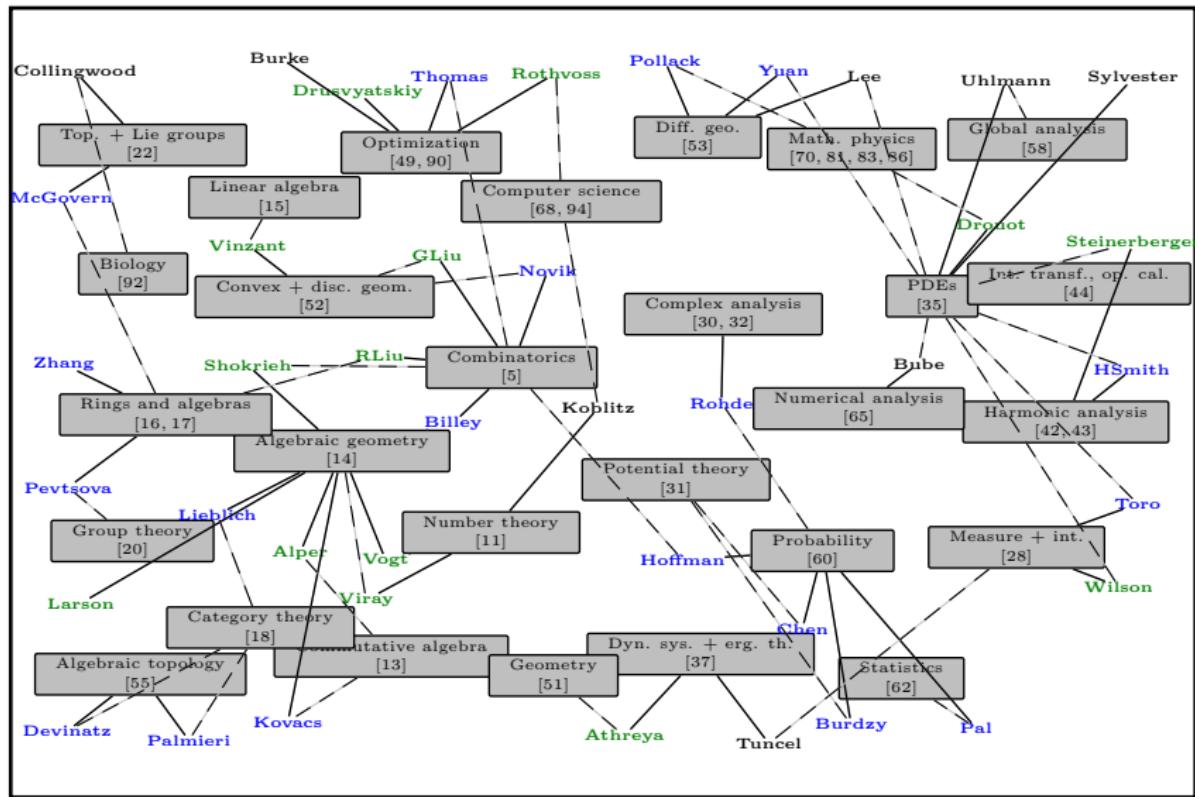


Diagram B



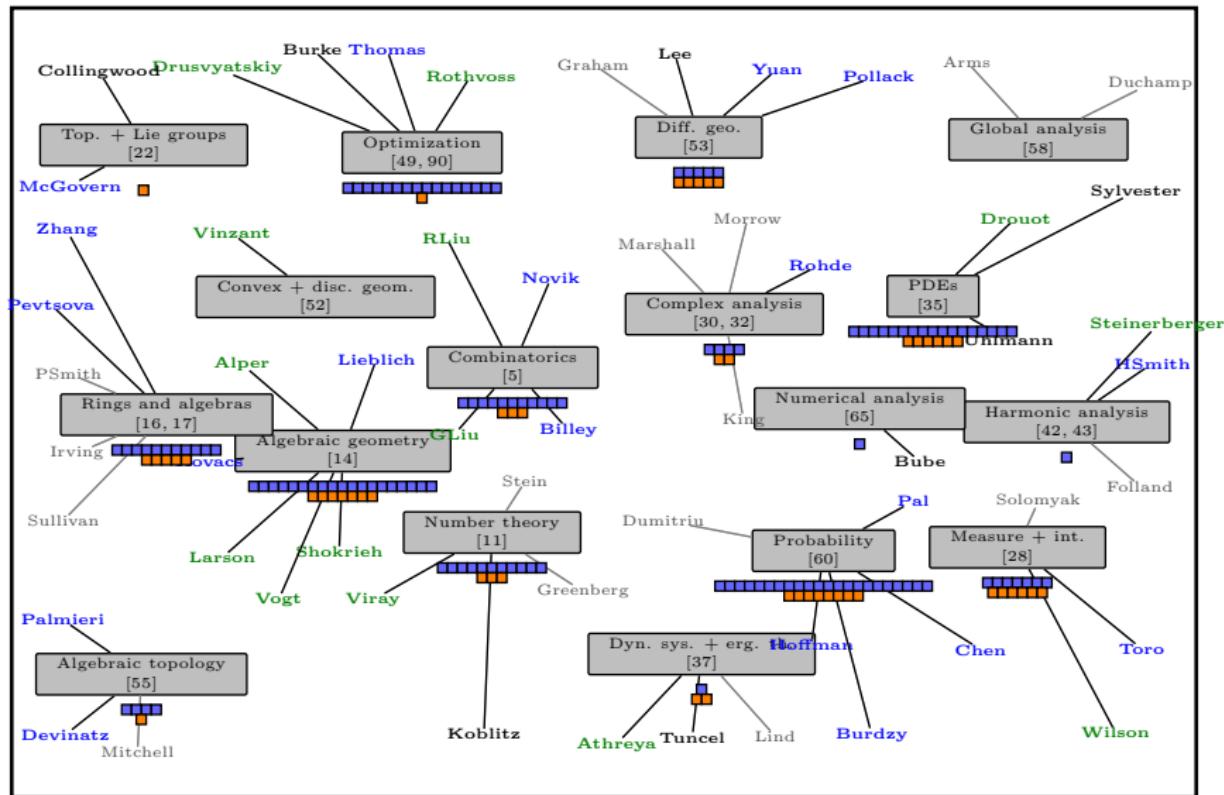
Including retired/departed faculty members. Only primary research area. Without disconnected areas.

Diagram C



Without retired/departed faculty members. Only primary and secondary research areas.

Diagram D



Including retired/departed faculty members. Only primary research area. Without disconnected areas. Including PhD+PostDocs.