LIANA YEPREMYAN, McGill University
The Local Stability Method and the Turán numbers of extensions

The *Turán number* of a graph G, denoted by $ex(n, G)$, is the maximum number of edges in an G-free graph on n vertices. The *Turán density* of a graph G, denoted by $\pi(G)$, is the limit as n tends to infinity of the maximum edge density of an G-free graph on n vertices. Unless $\pi(G) = 0$, it captures the asymptotic behaviour of $ex(n, G)$.

During this talk I will discuss a method, which we call *local stability method*, that allows one to obtain exact Turán numbers from Turán density results. This method can be thought of as an extension of the classical stability method by generically utilizing Lagrangians and symmetrization. Using it, we solved a conjecture of Frankl and Füredi from 1980's and obtained the Turán number of a hypergraph called, *generalized triangle*, for uniformities 5 and 6. Further, our method is more generally applicable for determining Turán numbers of so-called *extensions*.

This is joint work with Sergey Norin.