Tomescu's graph coloring conjecture and beyond

John Engbers, Marquette University
Aysel Erey*, Utah State University
Jacob Fox, Stanford University
Xiaoyu He, Princeton University

Let $P_G(k)$ be the number of proper k-colorings of a finite simple graph G. Tomescu's conjecture, which was recently solved by Fox, He, and Manners, states that $P_G(k) \leq k!(k-1)^{n-k}$ for all connected graphs G on n vertices with chromatic number $k \geq 4$. In this talk, I will present our recent results on the same problem with the additional constraint that G is ℓ-connected. I will also discuss some generalizations of the problem which are still unsolved.

Keywords: coloring, chromatic number, chromatic polynomial, connectivity