COMBINATORICS AND GROUPS
11-14/04/2016, BEDLEWO, POLAND

CASTELNUOVO-MUMFORD REGULARITY OF GRAPHS

YUSUF CIVAN

We present new combinatorial insights into the calculation of (Castelnuovo-Mumford) regularity of graphs and review recent advances on the topic. This will include the characterization of graph classes where exact computation is possible, the description of various upper/lower bounds on the regularity arising from related (matching/covering) parameters of graphs and the realization problem, that is, the existence of graphs with $\mathrm{reg}(G) = n$ and $\mathrm{im}(G) = k$ for any pairs (n, k) of integers $n \geqslant k \geqslant 1$. The solution of the particular case $k = 1$ owes its existence to those of Gromov hyperbolic right angled Coxeter groups of arbitrarily large virtual cohomological dimension. (This is a joint work with Türker Bıyıkoğlu)

Department of Mathematics, Suleyman Demirel University, Isparta, 32260, Turkey.
E-mail address: yusufcivan@sdu.edu.tr