On total σ_t-irregularity of graphs

Martin Knor

(joint work with Darko Dimitrov, Slobodan Filipovski, and Riste Škrekovski)

Generalized total σ_t-irregularity is defined as

$$\sigma_t^\alpha(G) = \sum_{\{u,v\} \in V(G)} |\deg_G(u) - \deg_G(v)|^\alpha.$$

Its minimum is attained for regular graphs, but for $\alpha = 2$ the maximum is not attained by antiregular graphs (i.e. by graphs with as many different vertex degrees as possible). Our main question is how to choose the exponent α (or $\alpha(n)$ where n is the order of G) so that the maximum is attained by antiregular graphs only.

We examine suitable exponents for general graphs and chemical graphs. As regards the minimum we study trees.

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