STSM by Katarina Bogdanović (Faculty of Mathematics, Belgrade, Serbia)

at University of Ljubljana, Faculty of Mechanical Engineering, Slovenia (21 April 2021 to 15 July 2021)

During STSM we proved new inequalities for the generalized and joint spectral radius and their essential versions of Hadamard geometric mean of bounded sets of positive kernel operators on Banach function spaces. We also proved new inequalities for the spectral radius, essential spectral radius, operator norm, measure of noncompactness and numerical radius of Hadamard weighted geometric mean of positive kernel operators on Banach function and Banach sequence spaces.

The notions of generalized and the joint spectral radius are important because of their applications such as invariant subspace theory, theory of Markov chains, theory of descrete and differential inclusions, where the logarithm of the joint spectral radius is well known as the maximal Lyapunov exponent.

Inequalities involved in our research are in finite dimensional case closely related to results of Kingman and Cohen. Kato extended these results to linear operators in a ordered Banach space in context of strongly continuous semigroups.

Semigroups of operators are important because they describe evolutions of linear systems and processes and have many applications.