**Some Problems of Fourier Analysis and Approximation Theory**

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**Abstract:** The goal of our lecture is to present our recent results related to the solutions of some open problems in the weight theory of Harmonic Analysis. Both the classical weight Lebesgue spaces and non-standard Banach function spaces will be treated.

We intend to discuss the following topics:

i) Two-weight uniform boundedness criteria of Cesáro means of variable order for univariate and multiple Fourier trigonometric series.

ii) Solution of Muckenhoupt's problem on the weighted norm convergence of partial sums of Fourier trigonometric series.

iii) Some fundamental inequalities for trigonometric polynomials in weighted grand Lebesgue spaces and their extensions.

iv) Approximation of periodic functions in some subspaces of grand variable Lebesgue spaces.