

L_p -VON NEUMANN INEQUALITIES, FROM COMMUTATIVE TO NON-COMMUTATIVE

SAMYA KUMAR RAY

ABSTRACT. In this talk, we consider multivariate von Neumann inequalities on commutative and non-commutative L_p -spaces. This is known to be the famous Matsaev's conjecture. We show that the multivariate von Neumann inequality on L_p -spaces is true for commuting tuple of isometries, $1 < p < \infty$. However, we show that, as in the well-studied case of $p = 2$, it fails eventually for some commuting tuple of contractions. We then discuss the case of non-commutative L_p -spaces. We exhibit a non-trivial class of commuting contractive Schur multipliers for which the non-commutative multivariate Matsaev's conjecture is true. We also study a special class of operators, called Ritt operators and exhibit many interesting results in this direction, for example a positive solution to joint similarity problem for this class of operators. Tools used are from harmonic analysis combined with operator theoretic techniques and Banach space geometry.

Key words and phrases. Functional Calculus, Ritt Operators, Bi-Ritt operators, Bisectorial operators.

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