

Algebra, Combinatorics and Number Theory Seminar

Date. Wednesday, November 08, 2023 - 4pm Porto, 1pm Rio de Janeiro ¹

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Title. The Grassmann convexity Shapiro-Shapiro conjecture

Abstract.

The Grassmann convexity conjecture by B. Shapiro and M. Shapiro admits several equivalent formulations.

One of them gives a conjectural formula for the maximal total number of real zeros of the consecutive Wronskians of an arbitrary fundamental solution to a disconjugate linear ordinary differential equation with real time.

Another formulation is in terms of convex curves in the nilpotent lower triangular group. There is a very elementary formulation in terms of lists of vectors in \mathbb{R}^k .

The conjecture remains open, but several partial results are known.

The formula has already been shown to be a correct lower bound.

It has also been shown to give a correct upper bound in several small dimensional cases.

More recently, a general explicit upper bound has been obtained.

The aim of this talk is to present the conjecture, state the known results and present a few proofs.

¹<https://videoconf-colibri.zoom.us/j/7820604023>