



Systems and Control Group Seminar

March 29th, 2023, DMat, University of Aveiro

Room 11.2.21

14:30

Necessary and sufficient conditions to lower semi-continuity of supremal functionals

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Abstract: Minimizing the $L - \infty$ norm of $f(Du)$ (for some appropriate function f) among functions u living in some given set of Sobolev functions is a problem that naturally appears in chemotherapy or nonlinear elasticity applications. The functionals involved in these problems can be extended by replacing the $L - \infty$ norm by the essential supremum. We call these supremal functionals. The study of existence of minimizers to such functionals was carried out by Barron, Jensen & Young in 2001 and led to several new concepts of convexity. In this talk, we revisit these concepts and clarify the relations between them. Our ultimate goal is to address the minimization of supremal functionals under the lack of lower semi-continuity. The current study settles the ground to pursue this goal in the future. This is a joint work with E. Zappale.

15:15

Low delay Streaming based on unit memory codes

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Abstract: Modern day communications requires packets to be sent with high reliability and very little delay. In this talk we focus on streaming codes for burst erasure packet channels. To prevent congestion, the encoding approach is via packet expansion. In this context the work of Martinian et al. introduced the construction of a burst correcting convolutional code from a block code. In this talk we present a construction of a burst correcting convolutional code from a unit memory (UM) code. We show how properties of the UM code translate into properties of the convolutional code. In particular, the convolutional code allows for a decreased decoding delay of bursts of erased packets.

This seminar was supported in part by the Portuguese Foundation for Science and Technology (FCT – Fundação para a Ciência e a Tecnologia), through CIDMA - Center for Research and Development in Mathematics and Applications, within project UIDB/04106/2020.