Diametral dimension and property $\left(\overline{\Omega}\right)$ for spaces S^ν

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June 8, 2017

Spaces S^ν are metrizable sequence spaces defined by Jaffard in the context of multifractal analysis and signal treatment. From a functional analysis point of view, the study of these spaces points out some topological properties, such as the facts they are locally pseudoconvex in general and locally p-convex in certain cases, Schwartz, and non-nuclear.

In this talk, we focus on two topological invariants, namely the diametral dimension (Bessaga, Mityagin, Pełczyński, Rolewicz) and the property $\left(\overline{\Omega}\right)$ (Vogt, Wagner). Firstly, we revisit a result of Aubry and Bastin giving the diametral dimension of locally p-convex spaces S^ν and extend it to some non-locally p-convex spaces S^ν. Secondly, we explain how these developments can be used to prove that a subclass of spaces S^ν (among which the locally p-convex ones) verifies the condition $\left(\overline{\Omega}\right)$.