

# SEMINAR

## Grupo de Análise Funcional e Aplicações Functional Analysis and Applications Group

### The isometric extension problem

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#### Abstract

We shall go back in time until 1932 in order to explore the origin of this question, which has attracted the attention of many mathematicians over the years. We shall also review the different variations of this open problem as well as its state-of-the-art, including a bunch of positive partial solutions for surjective isometries between remarkable subsets of concrete spaces. This talk is devoted to presenting the isometric extension problem. Let  $X$  and  $Y$  be two normed spaces. Suppose  $\Delta : U \rightarrow V$  is a surjective isometry from a subset  $U \subseteq X$  onto a subset  $V \subseteq Y$ . Does  $\Delta$  admit an extension to a surjective linear isometry from  $X$  onto  $Y$ ?

We shall go back in time until 1932 in order to explore the origin of this question, which has attracted the attention of many mathematicians over the years. We shall also review the different variations of this open problem as well as its state-of-the-art, including a bunch of positive partial solutions for surjective isometries between remarkable subsets of concrete spaces.

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