

## ATENEO



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## *One sphere to determine all the other structures*

**Abstract:** The celebrated Mazur--Ulam theorem (1932) implies that the underlying metric space associated with any normed space determines uniquely its structure of vector space. This conclusion was improved by P. Mankiewicz in 1972 by establishing that every surjective isometry between the metric spaces given by the closed unit balls of two normed spaces admits an extension to a surjective real linear isometry between the spaces, that is, the metric space determined by the closed unit ball of a normed space determines the whole structure of the space.

In 1987, D. Tingley introduced a new perspective by considering the following problem: Suppose  $\Delta : S(X) \rightarrow S(Y)$  is a surjective isometry between the unit spheres of two Banach spaces  $X$  and  $Y$ . Does  $\Delta$  admit an extension to a surjective linear isometry from  $X$  onto  $Y$ ?

A solution to Tingley's problem has been pursued by many researchers during the last thirty years for a wide list of Banach spaces; positive answers have been found for some concrete structures. This talk will be devoted to survey some of the recent advances on Tingley's problem in several concrete cases. The talk will be completely expository to be accessible to a wide audience.

Nota: La capacidad de la Sala de Grados está limitada a 13 personas. Para asistencia presencial se ruega confirmación en la dirección [bcano@uva.es](mailto:bcano@uva.es). La conferencia se podrá seguir online en

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**Sala de Grados I, Facultad de Ciencias**  
**Jueves 27 de Mayo de 2021 (17:00)**

