

# **Bootstrap Approach to Test the Linear Independence between Interval-valued Random Sets**

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In a previous paper we introduced the so-called ‘extended determination coefficient’ as a real-valued measure of the strength of association between two interval-valued random elements (assumed to be formalized as compact convex random sets). In the setting of least squares fitting of a ‘linear’ relation between interval-valued data based on a generalized metric, this coefficient can be interpreted as the proportion of total variation in the response interval-valued random set which is explained by the regression relation with the predictor one. In this paper we are going to present a bootstrap procedure to determine whether or not this proportion differs significantly from zero; the application of this technique can be performed in a single stage, irrespective of the considered sample. The validity of the introduced method is discussed with some simulation studies, and illustrated by means of a real-life example.