

Lépinette Emmanuel (Dauphine University, Paris) Conditional cores and conditional convex hulls of random sets.

We define two non-linear operations with random (not necessarily closed) sets in Banach space: the conditional core and the conditional convex hull. While the first is sublinear, the second one is superlinear (in the reverse set inclusion ordering). Furthermore, we introduce the generalised conditional expectation of random closed sets and show that it is sandwiched between the conditional core and the conditional convex hull. The results rely on measurability properties of not necessarily closed random sets considered from the point of view of the families of their selections. Furthermore, we develop analytical tools suitable to handle random convex (not necessarily compact) sets in Banach spaces; these tools are based on considering support functions as functions of random arguments. The paper I present is motivated by applications to assessing multivariate risks in mathematical finance. This is a joint work with Ilya Molchanov.