

Probability functions acting on the union of polyhedra

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ABSTRACT

In optimization problems under uncertainty wherein the decision has to be taken prior to observing uncertainty, probability functions play a key role. Indeed they allow us to model safety of the decisions in a convenient way. In this talk we will discuss the situation wherein the underlying inequality system - that impacted by both the decision vector and uncertainty - can be described by a union of polyhedra. We will show that the resulting probability function is nonetheless smooth in many cases. We will also briefly discuss how the resulting gradient formulæ can be implemented in practice.

This is a joint work with *Paul Javal* from *CMA Mines Paris Tech* and *Pedro Pérez-Aros* from *Universidad de O'Higgins*.