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Some properties of the set of Copulas using Krein-Milman theorem

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Abstract

As known, copulas are a new technical tool extensively used in all fields of Artificial Intelligence (AI)[1]. In many recent papers such as [2], [3] and [4], some concepts of have been treated deeply in order to understand asymmetry problems. Furthermore, some new asymmetric copulas are constructed to overcome the lake of symmetry. In the current paper, we describe mathematically and via interesting theorems of functional analysis, how the extreme values impact directly our understanding of the evolution. To do so, we star by giving geometrical and topological properties of the set of all copulas which will play a central role in the edification of a better understanding of the geometry, mainly the extreme points. Some algorithms illustrate this geometrical aspect of dependence between factors, impacting the evolution of a given pheneomenon[5]. We recal the interest of some new asymmetric copulas that were recently defined mainly in [6].

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