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## Topology of Copulas Set and applications

### Communication Info

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(1) Copulas

(2) Topolgy

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### Abstract

We revisit copulas in different points of view: geometrical, topological and statistical perspectives. For elementary notions on copulas, we refer to [1]. For problems of asymmetry and Skewness and kurtosis, we refer to recent papers of Sani, Karbil and Elmaazouz such as [2], [3], [4] and references therein where suggested some new asymmetric copulas are suggested. Here, we revisit some topological and geometrical properties of the set of all continuous copulas. We treat, in particular, the existence of extreme points and rely this optimization aspect to maximization of correlation via a practical determination of a maximal empirical copula. Our theoretical results are tested and applied on reduced sample to highlight tail independence between oxygen saturation SO<sub>2</sub> and heart rate. We will take advantage of new asymmetric copulas, which were recently defined mainly in [6].

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