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Spatially homogeneous copulas

Fabrizio Durante[1] · Juan Fernández Sánchez[2] · Wolfgang Trutschnig[3]

Abstract

We consider spatially homogeneous copulas, i.e. copulas whose corresponding measure is invariant under a special transformations of $[0, 1]^2$, and we study their main properties with a view to possible use in stochastic models. Specifically, we express any spatially homogeneous copula in terms of a probability measure on $[0, 1)$ via the Markov kernel representation. Moreover, we prove some symmetry properties and demonstrate how spatially homogeneous copulas can be used in order to construct copulas with surprisingly singular properties. Finally, a generalization of spatially homogeneous copulas to the so-called (m, n)-spatially homogeneous copulas is studied and a characterization of this new family of copulas in terms of the Markov $*$-product is established.

✉ Fabrizio Durante
  fabrizio.durante@unisalento.it

  Juan Fernández Sánchez
  juanfernandez@ual.es

  Wolfgang Trutschnig
  wolfgang@trutschnig.net

[1] Dipartimento di Scienze dell'Economia, Università del Salento, Campus Ecotekne - Palazzina C, Via Monteroni 165, 73100 Lecce, Italy

[2] Grupo de Investigación de Análisis Matemático, Universidad de Almería, Carretera Sacramento s/n, La Cañada de San Urbano, 04120 Almería, Spain

[3] Department for Mathematics, University of Salzburg, Hellbrunner Strasse 34, 5020 Salzburg, Austria