

# Beyond simplified pair-copula constructions

Christian Genest

Any multivariate density can be decomposed through successive conditionings into basic building blocks involving only pairs of variables. The various ways in which this can be done are called regular vines; C-vines and D-vines are prime examples of such structures.

A pair-copula construction (PCC) is a modelling strategy in which conditional and unconditional bivariate copula densities are assigned to the components of a regular vine. This approach owes its flexibility to the fact that users are unrestricted in their choice of vine and parametric bivariate copulas for the building blocks.

In practice, inference for PCCs often assumes that each pair-copula in the higher levels of the vine structure depends on the conditioning variables merely through the univariate conditional distribution functions that appear as the arguments of the pair-copula.

In this talk, I will show how this simplifying assumption can be assessed using a local likelihood estimator of the conditional copula parameter. After describing the finite- and large-sample properties of this estimator, I will outline how a formal test of the simplifying assumption can be performed in trivariate PCCs. The effectiveness of the estimator as a visual diagnostic tool will be illustrated on real and synthetic data. As we shall see, the simplifying assumption can sometimes be quite misleading.

This talk is joint work with Dr Elif F. Acar and Prof. Johanna Nešlehová.

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<sup>1</sup>Christian Genest, Ph.D., PStat  
Department of Mathematics and Statistics, McGill University, Montréal, Canada