Publicacions més rellevants de la línia de recerca:
Distribucions de probabilitat amb marginals donades

Referència: Cuadras, C. M, Cuadras, D. and Lahlou, Y. Principal directions of the general Pareto distribution with applications. *Journal of Statistical Planning and Inference*, **136 (8)**, (2006), 2572-2583.

Abstract: A random variable with Pareto distribution is expanded as a series of principal components. A comparison with the exponential distribution is performed, an inequality concerning a function and his derivative is obtained as well as the asymptotic distribution of some statistics related to Rao's quadratic entropy.

Referència: Cuadras, C. M. and Cuadras, D. Eigenanalysis on a bivariate covariance kernel. *Journal of Multivariate Analysis*, **99 (10)**, (2008), 2497-2507.

Abstract: Certain constructions of copulas can be interpreted as an eigendecomposition of a kernel. We study some properties of the eigenfunctions and their integrals of a covariance kernel related to a bivariate distribution. The covariance between functions of random variables in terms of the cumulative distribution function is used. Some bounds for the trace of the kernel and some inequalities for a continuous random variable concerning a function and its derivative are obtained. We also obtain relations to diagonal expansions and canonical correlation analysis and, as a by-product, series of constants for some particular distributions.

Referència: Cuadras, C. M. Constructing copula functions with weighted geometric means. *Journal of Statistical Planning and Inference*, **139 (11)**, (2009), 3766-3772.

Abstract: The weighted arithmetic mean of two copulas is a copula. In some cases, geometric and harmonic means also provide copulas. There are copulas specially appropriate to be combined by using weighted geometric means. With this method of construction we combine Farlie-Gumbel-Morgentern and Ali-Mikhail-Haq copulas to obtain families of copulas which can be expressed in terms of double power series. The Gumbel-Barnett copula is also considered and a new copula is proposed, which arises as the first order approximation of the weighted geometric mean of

two copulas. Invariance of two multivariate distributions (Cuadras-Auge and Johnson-Kotz) by weighted geometric and arithmetic means is also studied.