Visualization of multivariate functions, sets, and data with package "denpro".

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Package "denpro" implements several methods for visualizing multidimensional objects. The package is specialized for the visualization of density functions and density estimates, and multivariate continuous data. One of the basic ideas is to transform multivariate objects to low dimensional objects so that certain important shape characteristics are preserved.

Figure 1 visualizes a 2D Clayton copula density whose paramater is 4, and which has Student marginals with degrees of freedom 4. Frame a) shows a contour plot of the density, frame b) shows a tail probability plot of the 0.005% level set of the density (level 0.001742), and frames c) and d) show a location plot of this level set. The contour plot is defined only for 2D densities but the other visualizations may be used in higher dimensional cases.

Figure 2 visualizes a data of size $n = 1000$ generated from the density in Figure 1a. Frame a) shows a scatter plot of the data, frame b) shows a tail frequence plot of the data, and frames c) and d) show a tail tree plot of the data. Again, the scatter plot is defined only for 2D data but the other visualizations may be used also in higher dimensional cases.

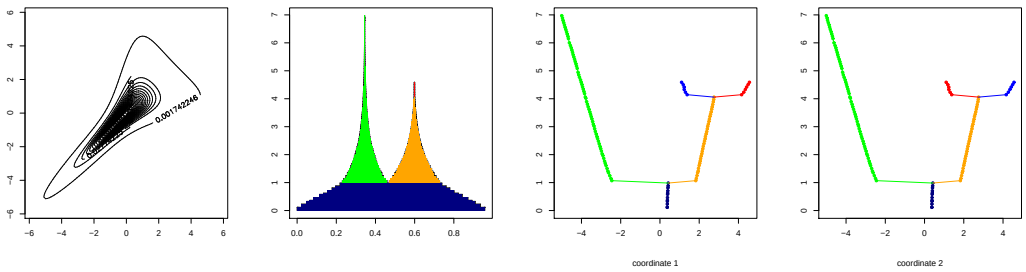

Figure 1: Visualization of a level set of a Clayton copula density which has Student marginals.

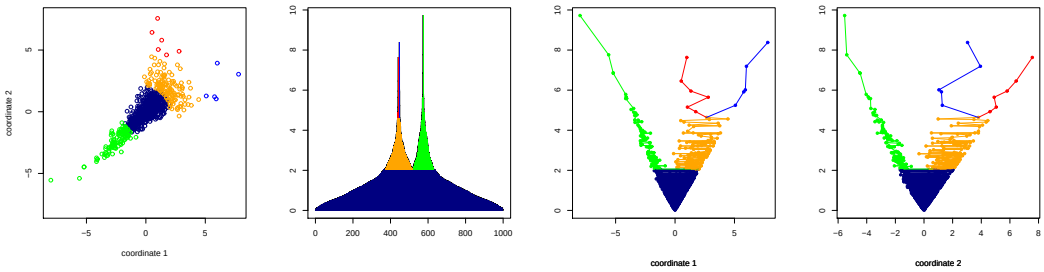

Figure 2: Visualization of data generated from the density in Figure 1a.