

Support of D_X :

$$\Delta_X = \{(x_1, \dots, x_n) \mid x_1 \leq \dots \leq x_n\}$$

Support of C_X :

$$\Delta_U = \{(u_1, \dots, u_n) \mid F_1^{(-1)}(u_1) \leq \dots \leq F_n^{(-1)}(u_n)\}$$

Isoprobabilistic transformation, such that $U = T(X)$ has distribution C_X :

$$\begin{aligned} T : \quad \mathbb{R}^n &\rightarrow [0, 1]^n \\ (x_1, \dots, x_n) &\mapsto (F_1(x_1), \dots, F_n(x_n)) \end{aligned}$$

Pseudo-inverse isoprobabilistic transformation:

$$\begin{aligned} T^{-1} : \quad [0, 1]^n &\rightarrow \mathbb{R}^n \\ (u_1, \dots, u_n) &\mapsto (F_1^{(-1)}(u_1), \dots, F_n^{(-1)}(u_n)) \end{aligned}$$

The objective is to study the inclusions $T^{(-1)}(\Delta_U) \subset \Delta_X$ and $T(\Delta_X) \subset \Delta_U$