ON DISTRIBUTIONS OF CONDITIONAL EXPECTATIONS

Adam Paszkiewicz

Abstract: Let $F$ and $G$ be distribution functions on $\mathbb{R}$. Then there exist a random variable $X$ and a $\sigma$-field $\mathfrak{U}$ satisfying $P(X < a) = F(a)$, $P(E(X|\mathfrak{U}) < a) = G(a)$ iff \[ \int_{(a,\infty)} (F(t) - G(t)) \, dt \leq 0 \leq \int_{(-\infty,a)} (F(t) - G(t)) \, dt \] for any $a \in \mathbb{R}$. The consideration is kept on a rather elementary level.

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