1 Summary

Tightness is often a necessary criterion for proving the weak convergence of a sequence of probability measures, especially when the measure space has infinite dimension.

2 Tightness

Definition 1 (Tightness) A collection $B$ of proper distributions (c.d.f.s) $F$ is called tight if $\lim_{x \to \infty} \sup_{F \in B} F(-x, x)^c = 0$. In other words, if $F(-x, x)^c \to 0$ as $x \to \infty$ uniformly over $F \in B$. 