ZIV–ZAKAI LOWER BOUND ON THE TIME DELAY ESTIMATION OF UWB SIGNALS

Author(s):
Hicham Anouar (EURECOM, France)
Aawatif Menouni Hayar (EURECOM, France)
Raymond Knopp (EURECOM, France)
Christian Bonnet (EURECOM, France)

Abstract:
A unique feature of ultra wideband (UWB) technology lies in its dual capabilities of communication and ranging. As UWB pulses are very narrow, very strict synchronization requirements are incurred as timing errors induce severe performances degradation. In this work, using second order statistics of the received signals, we present the Ziv–Zakai lower bound (ZZLB) for the time delay estimation of UWB signals. This bound is known to be more accurate in the low SNR regime than the Cramer–Rao lower bound (CRLB).