

MIMO FM-CW radar using beat signal averaging method

ABSTRACT

This paper proposes a MIMO FM-CW radar system using beat signal averaging method for maritime surveillance application. The system operates by transmitting multiple waveform signals and receiving multiple waveform signals, before averaging the beat signals at each receiver. A numerical simulation was conducted to validate the performance of the proposed method in terms of ranging error probability vs SNR. It is found that the radar shows high accuracy in range estimation even in low SNR values, compared to conventional FM-CW radar using single antenna system.

Keyword: FMCW radar; MIMO; Frequency diversity; Radar performance; Maritime radar