Abstracts

Novel nonlinear FMCW radar for precise distance and velocity measurements

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A new nonlinear FMCW radar concept for precise distance and velocity measurements is presented. The radar system incorporates a surface acoustic wave (SAW) reference device used for an online detection of oscillator phase errors. With a specific Doppler/distance ambiguity function, that is continuously adapted to the measured phase error, the target signal is evaluated. By applying this novel technique the optimal distance resolution at a given sweep bandwidth is obtained independently of the Doppler resolution. The proposed system approach has been evaluated with a 77 GHz radar incorporating a flip-chip MMIC VCO.

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