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Hidden Oscillations in the Mathematical Model of the Optical Binary Phase Shift Keying (BPSK) Costas Loop

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Abstract : Nonlinear analysis of the phase locked loop (PLL)-based circuits is a challenging task. Thus, the simulation is widely used for their study. In this work, we consider a mathematical model of the optical Costas loop and demonstrate the limitations of simulation approach related to the existence of so-called hidden oscillations in the phase space of the model.

Keywords : optical Costas loop, mathematical model, simulation, hidden oscillation
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