

PhD Dissertation Announcement

Design and Fabrication of a Controller for a Digital Phase Locked Loop

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A controller for an all digital phase locked loop which operates by pulse addition and subtraction is investigated. Being a first order system, the digital phase locked loop is more limited with regards to parameter controls than its second order analog counterpart. A loop with a fast lock time generally has poor phase/frequency accuracy, while a loop programmed for high accuracy will have slow lock time. Given that the digital phase locked loop is digitally programmable, a set of parameters may be selected which will minimize the lock time of the loop. Once the loop is locked, the parameters may be changed to alter the loop bandwidth increase the loop accuracy. A controller circuit has been designed to control the loop parameters and optimize the loop performance. The proposed circuit was designed using integrated circuit layout tools and submitted to a semiconductor manufacturer for fabrication. The controller concept and results of simulations and prototype experiments will be presented.

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