Abstract Submitted
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A new approach to driving and controlling precision lasers for cold-atom science BEN LUEY[1], JEREMY SHUGRUE[2], MIKE ANDERSON[3], Vescent Photonics — Vescent's Integrated Control Electronics (ICE) Platform is a new approach to controlling and driving lasers and other electoral devices in complex atomic and optical experiments. By employing low-noise, high-bandwidth analog electronics with digital control, ICE combines the performance of analog design with the convenience of the digital world. Utilizing a simple USB COM port interface, ICE can easily be controlled via LabView, Python, or an FPGA. High-speed TTL inputs enable precise external timing or triggering. ICE is capable of generating complex timing internally, enabling ICE to drive an entire experiment or it can be directed by an external control program. The system is capable of controlling up to 8 unique ICE slave boards providing flexibility to tailor an assortment of electronics hardware to the needs of a specific experiment. Examples of ICE slave boards are: a current controller and peak-lock laser servo, a four channel temperature controller, a current controller and offset phase lock servo. A single ensemble can drive, stabilize, and frequency lock 3 lasers in addition to powering an optical amplifier, while still leaving 2 remaining slots for further control needs.

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