

Abstract Submitted
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Photon Counting with an Embedded Micro Mojo V3 FPGA¹

SARA LENTRICCHIA, CARL GROSSMAN, Swarthmore College — We used an inexpensive Field Programmable Gate Array (FPGA) to generate time stamps from a photon counting experiment. The FPGA was configured to receive signals from an avalanche photodiode, latch onto a 32 bit, 400 MHz clock/counter, and transmit the time stamps to a host computer. These time stamps were then analyzed on the host machine in real time to calculate the intensity auto-correlation function of the signal source, in our case a fluorescence correlation spectroscopy experiment. The basic state machines for the system are a clock/counter/trigger, FIFO data buffer, and serial I/O to an onboard processor that handles communication with the host. The trigger state machine is similar to a clock except the cycle is based on the signal positive edge. The trigger cycle stores the counter and initiates data transfer to the FIFO buffer.

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