

Abstract Submitted  
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**Optical homodyne for pulsed lasers**<sup>1</sup> KATELYN WATSON,  
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— A homodyne method is presented for determining the degree of coherence of  
laser pulses. The method was first tested using computer generated data with vary-  
ing amounts of noise to test the accuracy of the method in the determination of  
the phase drift programmed into the pulses. Analysis of the computer generated  
data also revealed the degree of sensitivity to timing jitter between the laser pulses.  
In order to eliminate the timing jitter, all analysis was completed on individual  
laser pulses. This was done by splitting the laser pulse into four beams with two  
traversing a variable path length to introduce a delay. A delayed pulse was over-  
lapped with a pulse without delay and directed onto the entrance slit of a streak  
camera. The other two pulses were also directed to the streak camera at locations  
separate from each other and the two overlapping pulses. Results are presented for  
a single-longitudinal-mode nanosecond laser and the frequency-doubled output from  
a Nd:YAG amplified picosecond Nd:YVO<sub>4</sub> mode-locked oscillator.

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