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Single photon laser ranging with no gating and nanosecond dead time by small pixel Multi-Pixel Photon Counter

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Abstract: Single photon laser ranging was demonstrated by using small pixel Multi-Pixel Photon Counter (MPPC) and integrated Time Correlated Single Photon Counting (TCSPC) technique and with no gating which is significant for ranging the target with unknown distance. Multi-target distances can be obtained within a few seconds at single photon level signal under daylight background. Thanks to the small pixel MPPC, the dead time was just a few nanoseconds, which is beneficial for reducing the ranging blind zone. The accuracy of the ranging reached sub-millimeter at a several-meter distance.

Keywords: Multi-Pixel Photon Counter; laser ranging; laser radar; dead time; gating multi-target ranging

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