

# Ultrafast stimulation of single photon avalanche diodes with a broad spectrum light source

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Silicon photon multipliers (SiPMs) are arrays of individual single photon avalanche diodes (SPADs). These devices have been under intense development for applications ranging from large-area particle physics experiments to industry applications such as LIDAR. Each application requires the device to be tailored to extract maximum performance. Using the Microscope for the Injection and Emission (MIEL) we seek to understand the foundational operating principles of SPADs and generate new models to develop better SiPM devices. MIEL is equipped with a broadband femtosecond OPA laser system (310-2700nm) which is used as a probe to understand SiPMs response to light. Additionally, two photon absorption using IR photons can be used to inject charge carriers at specified depths. MIEL is also equipped to measure the secondary emission of SPADs to understand external cross-talk, and potentially develop methods of mitigating internal cross-talk. This MIEL system is currently being used to characterize a digital SiPMs developed by UdeS. An update on the experimental capabilities and results of the MIEL setup will be shown.

## Do you need a VISA letter for traveling to Canada ?

No

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