Contribution ID: **625** Type: **Parallel session talk**

External Cross-talk characterization from dark avalanches

Thursday 27 May 2021 09:48 (18 minutes)

This talk presents a characterization of the light emission from dark noise in Silicon Photomultipliers (SiPMs). SiPMs are made of arrays of $\sim 10^4$ single photon avalanche diodes (SPADs) which are known to emit photons during the charge avalanche process. The spectral shape and emission rates of these photons are crucial data for understanding both external and internal cross-talk in these devices. This talk will present measurements of the dark noise emission spectra of the Fondazione Bruno Kessler (FBK) VUV-HD3 SiPM and the Hamamatsu Photonics K.K. (HPK) VUV4 SiPM, using a custom Light Emission and Injection Microscopy apparatus, for photon wavelengths between $400 - 1050$ nm and as a function of over-voltage. Additionally, we will propose a new theoretical model to infer the source of the dark noise in p-on-n SiPMs. This model shows as dark noise avalanches in p-on-n SiPMs are hole driven and they cannot be reduced to Shockley-Read-Hall thermal recombination.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

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