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## Signal Processing for SiPM timing applications in the presence of High Dark Count Rate.

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Although SiPMs have become an attractive photodetector for LHC and future HL-LHC detector systems, the levels of radiation exposure (ie up to  $2 \times 10^{14}$  neq/cm<sup>2</sup> in the case of the CMS Barrel timing layer) have motivated significant R&D on mitigating the consequences of increased leakage current/Dark Counts. The challenge for signal processing is that ~GHz levels of Dark Counts result in a noise background which, in the frequency domain, has similar characteristics to the signal (so-called “1/f noise”). We demonstrate a technique for mitigating the degradation of time resolution that could be applied to the CMS LYSO/SiPM design, due to this noise term.

**Primary author:** WHITE, Sebastian (member@virginia.edu)

**Presenter:** WHITE, Sebastian (member@virginia.edu)

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