



PROCEEDINGS PAPER

Multiply sampled read-limited and background-limited noise performance

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Paper Abstract

The newest 256 X 256 InSb arrays (CRC-590 and CRC-463 multiplexers) from Santa Barbara Research Center have reached a milestone in low noise performance. Using the Fowler-sampling technique to acquire data, we have achieved 10 - 13 e⁻ multiply sample read-out (MSR) noise with the new arrays. With this remarkably low noise performance, background limited performance occurs at relatively small signal levels, viz. a few percent of full-well depth. The signal-to-noise capability of infrared detectors operating in both read noise and background limited performance is an important parameter for evaluating the efficacy of various data sampling methods. We conclude that both line-fitting and Fowler- sampling are the best sampling methods covering the whole performance regime, providing large improvement in the read-noise dominated regime and approaching CDS capability in the photon-noise dominated regime.

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