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ERB Control Number (G#/B#)	Division	JRES?
B2018-0305	686	☐

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MANUSCRIPT REVIEW AND APPROVAL

Title and Subtitle (Cite in full, Capitalize first letter of each word except articles)
Multi-pulse fitting of Transition Edge Sensor signals from a near-infrared continuous-wave source

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Performing Organization (check one box)
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Type of Report and/or Period Covered

Proposed for NIST Publication

☐ Journal of Research (NIST JRES)	☐ Grant/Contract Reports (NISTGCR)	☐ Monograph (NIST MN)	☐ Other
☐ J. Phys. & Chem. Ref. Data (JPCRD)	☐ Natl. STD. Ref. Data Series (NIST NSRDS)	☐ Letter Circular	
☐ Handbook (NIST HB)	☐ Federal Info. Process. STDS. (NIST FIPS)	☐ Building SCI. Series	
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Review of Scientific Instruments

Publishing Medium: ☒ Paper ☐ Diskette ☐ CD-ROM ☐ WWW ☐ Other

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Publication ID = (926339):

Abstract (A 2000-character or less factual summary of most significant information. If document includes a significant bibliography or literature survey, cite it here. Spell acronyms on first reference.)
Transition-edge sensors (TES) are photon-number resolving calorimetric spectrometers with near unit efficiency. Their recovery time on the order of microseconds limits the number resolving ability and timing accuracy in high photon-flux conditions. This is usually addressed by pulsing the light source or discarding overlapping signals, thereby limiting its applicability. We present an approach to assign detection times to overlapping detection events in the regime of low signal-to-noise ratio, as in the case of TES detection of near-infrared radiation. We use a two-level discriminator, inherently robust against noise, to coarsely locate pulses in time, and timestamp individual photoevents by fitting to a heuristic model. As an example, we measure the second-order time correlation of a coherent source in a single spatial mode using a single TES detector.

Key Words (Maximum of 9; 28 characters and spaces each, separate with semicolons, alphabetic order; capitalize only proper names.)
If the paper is relevant to a strategic focus area (SFA) namely homeland security, nanotechnology, biosystems and health, or information/knowledge management, list the SFA as a keyword so that we can identify the work for SFA bibliographies.
single photon detector; transition edge sensor; quantum information

Availability:
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AUTHORS: If you do not wish this manuscript announced before publication, please check here. ☒

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