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## Progress on optical photon calibration source for X-ray microcalorimeters

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High-resolution X-ray microcalorimeters are challenging to characterize and calibrate at low energies because of the difficulty of obtaining narrow calibration lines approaching the detector resolution. Short pulses of optical light, e.g. generated by a 405 nm laser diode, can be used to provide combs of very narrow calibration lines for TES detectors as long as the detector can resolve the photon number. We have recently demonstrated this scheme for high resolution X-ray micro-calorimeter pixels for photon numbers up to about  $n=130$ , i.e. about 400 eV. However, we found that the valleys between integer photon numbers fill in with increasing photon number so that for energies above 0.4 keV the photon number could not be resolved. Here we describe ongoing work to identify the mechanism causing the degradation and discuss the prospects of extending the technique to higher energies.

### Less than 5 years of experience since completion of Ph.D

N

### Student (Ph.D., M.Sc. or B.Sc.)

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