



Weak-link evidence in small Transition Edge Sensors

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Transition edge sensors (TESs) are developed at INRiM for single photon counting in the visible-near infrared region. TESs are extremely interesting for many fields, like material analysis, quantum information and quantum metrology, because they are able to resolve the number of the absorbed photons. Both Ti/Au bilayers, with transition temperatures around 100mK, and Ti films, with transition temperatures around 400mK, have been fabricated in order to obtain high energy resolution and short response times, respectively. To obtain good energy resolution at 400mK it is necessary to reduce the film heat capacity, that can be done reducing the TES active area down to few mm². In small devices the proximity effect related to the superconducting wiring can induce a weak link behavior. In this work we report measurements in magnetic field where a modulation of the TES critical currents are compared among TESs with different area.