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Pulse response of a Kinetic Inductance Detector in the non-linear regime

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Kinetic Inductance Detectors (KIDs) were born as superconducting detectors for electromagnetic radiation. Thanks to their excellent energy resolution, to the simple sensor design and fabrication and to the ease of multiplexing, these detectors suddenly became object of several R&D projects in different physics fields. However, in most applications the KID sensitivity is ultimately limited by the noise produced by the cryogenic amplifier. The most simple expedient to overcome this limit is to boost the readout power of the device. Nevertheless, a higher input power may also lead the kinetic inductance of the superconductor to acquire a current dependency and so induce a non-linear response. During this talk, a model to describe the KID pulse response in the non-linear regime will be introduced: by including the thermal effects due to power absorption, this model correctly reproduces the experimental data within a maximum deviation of 10%.

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

Y

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Y

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