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Accession number:20113314232225 Title:Terahertz pulse driven Josephson junctions Authors:Camerlingo, Carlo (1) Author affiliation:(1) CNR - Consiglio Nazionale Delle Ricerche, Istituto di Cibernetica E. Caianiello, Via Campi Flegrei 34, I-80078 Pozzuoli, Italy Corresponding author: Camerlingo, C.(c.camerlingo@cib.na.cnr.it) Source title: Physica C: Superconductivity and its Applications Abbreviated source title: Phys C Supercond Appl Volume:471 Issue:17-18 Issue date:September 2011 Publication year:2011 Pages:493-496 Language:English ISSN:09214534 CODEN:PHYCE6 Document type: Journal article (JA) Publisher: Elsevier, P.O. Box 211, Amsterdam, 1000 AE, Netherlands Abstract: The voltage response of a Josephson junction to a pulsed terahertz current is evaluated in the limit of a negligible junction capacitance (overdamped limit). The time-dependent superconductor phase difference across the junction is calculated in the framework of the standard resistive shunted junction model by using a perturbative method. The pulsed current bias affects

the time average value of the voltage across the junction and current steps are induced in the current-voltage characteristics for voltage values depending on the pulse repetition rate. The current step height is proportional to the square of the pulse time width (τ) to the period (T) ratio. A fast response detector for pulsed Terahertz radiation is proposed, with an expected responsivity of the order of 0.1 V/W and an equivalent noise power of about $3 \times 10-10$ W/Hz1/2. Number of references:23