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# Proton induced radiation damage on high quality Superconducting Tunnel Junction Detectors

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**Abstract**

The radiation hardness of Josephson devices represents an important parameter in many applications involving Superconducting Tunnel Junction Detectors (STJD's). Typical examples are represented by space based astronomical, or by nuclear physics experiments, requiring high energy resolution in a radiation hostile environment. In this paper we report on the results obtained at 1.2 and 0.3 K on high quality, Nb–Al–$AlO_x$–Al–Nb junctions, with a critical current density of order 700 A/cm$^2$. The devices were exposed to fluences up to $1.4 \times 10^{11}$ proton/cm$^2$, a level exceeding the expected dose absorbed during a typical space mission. No permanent change in either the current–voltage characteristics or the spectroscopic performance of the devices were observed.

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