

Simulated contrast of two dislocations*

© M. Ledra^{1,2}, A. El Hdiy^{3,¶}

¹ Centre Universitaire Abdelhafid BOUSSOUF-Mila,
BP 26, RP 43000 Mila, Algeria

² Laboratoire Materiaux semiconducteurs metalliques, Universitd de Biskra,
BP 145, R.P. 07000 Biskra, Algeria

³ Laboratoire de Recherche en Nanosciences (EA4682), Université de Reims, Champagne-Ardenne,
BP 1039, 51687 Reims cedex 2, France

¶ E-mail: abdelillah.elhdiy@univ-reims.fr, Ledra.mohammed@gmail.com

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A three-dimensional Monte Carlo simulation algorithm is used to study the contrast of two dislocations perpendicular to the irradiated surface of an *n*-doped silicon sample in the electron beam induced current mode. The dislocations are positioned in the irradiation trajectory, and each of both is considered as a cylinder where the minority carrier diffusion length varies abruptly from a low inside dislocations up to a high value outside dislocations. The EBIC contrast was obtained by simulating the random diffusion of carriers generated at point-like sources randomly distributed within the generation volume. Results are analyzed on the basis of change in the generation volume in the bulk of the sample and of carrier trapping process inside dislocations. The EBIC contrast increases with the increase of the electron beam energy. It also increases when the minority diffusion length inside dislocations, or their separating distance decreases.

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