

Abstract Submitted
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Improvements of Defect Analysis by Space-Charge Wave Spectroscopy¹ KAY-MICHAEL VOIT, University of Osnabrueck, BURKHARD HILLING, HEINZ-JÜRGEN SCHMIDT, MIRCO IMLAU — We report on our recent advancements in space-charge wave spectroscopy, which can be used to investigate defect structures in classical high-resistive semiconductors and insulators. It permits to estimate the effective trap concentrations as well as the effective donor density N_{eff} and the product $\mu\tau$ of electron mobility and life-time in the conduction band. We present a novel method of space-charge wave excitation, using a superposition of a running and a static sinusoidal illumination pattern. Thus we acquire – in contrast to the former oscillating pattern – a distinct direction of movement. The proposed new technique can be regarded as an effective amelioration, as the theoretical analysis is no longer limited by numerous presumptions like low modulation depth or small oscillation amplitudes. It not only overcomes these limits of the experimental configuration improving accuracy of SCW spectroscopy, but it also provides additional information, such as the sign of the charge carriers.

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