

TUNNELING IN MULTI-JUNCTION PHOTOVOLTAICS: EFFECTS OF HIGH CONCENTRATION OF SUNLIGHT.

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This talk summarizes results of our experimental studies of a transition from high-conductance tunneling to low-conductance thermal diffusion behavior [1-2] that tunnel diodes in multi-junction concentrator solar cells undergo at high concentrations of sunlight. In particular, a prominent dependence of the threshold photocurrent density for this transition on the degree of localized irradiation [3] is presented and discussed in terms of the lateral spreading of excess majority carriers. The ramifications of our findings for photovoltaic design, diagnostics and performance are addressed.

References

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