Abstract Submitted
for the TSF09 Meeting of
The American Physical Society

Losses in Particle Photovoltaic cells HECTOR VALDEZ, WILEHLMUS GEERTS, Physics, Texas State, LAWRENCE LARSON, Electrical Eng., Texas State — The power output of a Si photovoltaic cell is limited by the optical and electrical losses amongst several other effects. Reflection out of the Si and shading by the electrical contacts will limit the number of photons that will be able to generate electron hole pairs near the pn-junction. Recombination of charge carriers in and near the depletion area will decrease power resulting in an effective shunt resistance. The contact- and spreading resistance of the electrodes further reduce the power output. In this paper we will theoretically compare the efficiency of a PV cell configuration consisting of an array of silicon particles with the efficiency of a conventional style PV Si cell.

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Date submitted: 05 Oct 2009 Electronic form version 1.4