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Thermopower of parallel conducting structures N. MILLER, Dept. of Materials Science and Engineering - UC - Berkeley, Materials Sciences Division - Berkeley National Lab, J.W. AGER III, Materials Sciences Division - Berkeley National Lab, H.M. SMITH III, Dept. of Materials Science and Engineering - UC - Berkeley, Materials Sciences Division - Berkeley National Lab, K.M. YU, Materials Sciences Division - Berkeley National Lab, E.E. HALLER, Dept. of Materials Science and Engineering - UC - Berkeley, Materials Sciences Division - Berkeley National Lab, W. WALUKIEWICZ, Materials Sciences Division, Berkeley National Lab, W.J. SCHAFF, Dept. of Electrical and Computer Engineering, Cornell University, C. GALLINAT, G. KOBLMÜLLER, J. SPECK, Materials Dept., UC - Santa Barbara — Thermopower measurements can be a powerful tool for characterizing structures with parallel conducting layers such as intentional heterostructures or p-n junctions (such as solar cells) or materials with unintentional surface accumulation or inversion layers (such as InN, InAs, In_2O_3, and CdO). In such cases, the macroscopically observed Seebeck coefficient depends on the contributions of various layers and the nature of the internal junctions between them. Thermopower measurements of such structures in group IV and III-V materials are presented and analyzed in terms of a parallel conduction model in which the observed Seebeck coefficient depends on the conductance-weighted Seebeck coefficients of each layer.

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