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Overlap distributions in two-dimensional spin glasses\textsuperscript{1} A. ALAN MIDDLETON, Syracuse University — Numerical results are presented for overlaps of configurations of two-dimensional Ising spin glasses. At low temperatures, the correlation length greatly exceeds the system size, so that spin-spin correlations are relatively long range and domain wall energies exhibit sensitive dependence to temperature, as seen in the low temperature phase of three-dimensional spin glasses. Exact sampling algorithms are used so that there is no doubt of equilibration. High statistics runs are carried out, with tens of thousands of samples of size \( L^2 = 256^2 \) simulated. The results of the size-dependent spin overlap distribution \( P(q) \) are evaluated using statistics recently developed by Yucesoy, Katzgraber and Machta. The statistics for two-dimensional models at low temperature are found to be quite similar to those of three-dimensional spin glasses at finite temperatures below the spin-glass transition.

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