

A NEW VIEW ON LACE EXPANSIONS AND SELF-AVOIDING RANDOM WALKS

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The lace expansion was introduced in a seminal paper by Brydges and Spencer to prove the diffusive behavior of (weakly) self-avoiding random walks in dimensions above 4. The expansion is quite simple, at least for the SAW, but there is considerable work needed to derive from it the diffusive behavior. We present some recent developments using contraction techniques directly in x -space. This leads to general results for solutions of convolution equations of which the one coming from the SAW is just a special case. As applications, it leads for the SAW to new results for walks in continuous space, asymmetric SAWs, and Green's functions, and for the classical situation, it leads to local results which are sharper than those obtained by other methods.

This is joint work with Christine Ritzmann, Luca Avena, Felix Rubin, and work in progress with Remco van der Hofstad, and Gady Kozma.