A new approach to the Berezinskii–Kosterlitz–Thouless transition in the planar XY model

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We present a new proof of the BKT phase transition in the spin XY (planar rotor) model on any planar lattice — a result first established by Fröhlich and Spencer in 1981. Our approach is quite elementary. It does not go through the analysis of vortices but rather through the dual integer-valued height function. We use a recent result of Lammers on delcoalization of general height functions together with a new loop representation of spin correlations in the XY model, that we believe to be of independent interest. This is joint work with Diederik van Engelenburg.

Thursday, September 30, 2021 02:00pm - 02:50pm

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