At the crossroads of physics and mathematics: the joy of integrable combinatorics (Philippe60)



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Arctic curve fluctuations in the square-ice model

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We study the emptiness formation probability (EFP) in the six-vertex model with domain wall boundary conditions. At the ice point, i.e., when all the Boltzmann weights are equal, we are able to build an explicit, although still conjectural, expression for the EFP as the Fredholm determinant of some linear integral operator. As the geometric parameters of the EFP are tuned to the vicinity of the arctic curve arising in the scaling limit, the obtained representation turns into the GUE Tracy-Widom distribution.

Joint work with A. Pronko - ArXiv:2405.04358

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