Quantum quenches in 2D via arrays of coupled chains ANDREW
JAMES, London Center Nanotechnology, ROBERT KONIK, Brookhaven National
Laboratory — Matrix product state (MPS) methods are extremely powerful when
applied to strongly correlated systems in 1D. However they are less efficacious in
2D due to the 'area law' growth of entanglement, limiting the system sizes that can
be studied. We combine MPS methods with analytical results for integrable chains
to build an algorithm that can study large (anisotropic) 2D many body quantum
systems, because it reduces the need for a large 'area'. As an example we describe
the application of our method to quantum quenches of the 2+1 dimensional quantum
Ising model.

Andrew James
London Center Nanotechnology

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