Scan for
my 5-minute
talk, M. Adler

Integrability in RMT

1) Exact solvability using combinatoric-algebraic structures after perhaps doing a deformation.

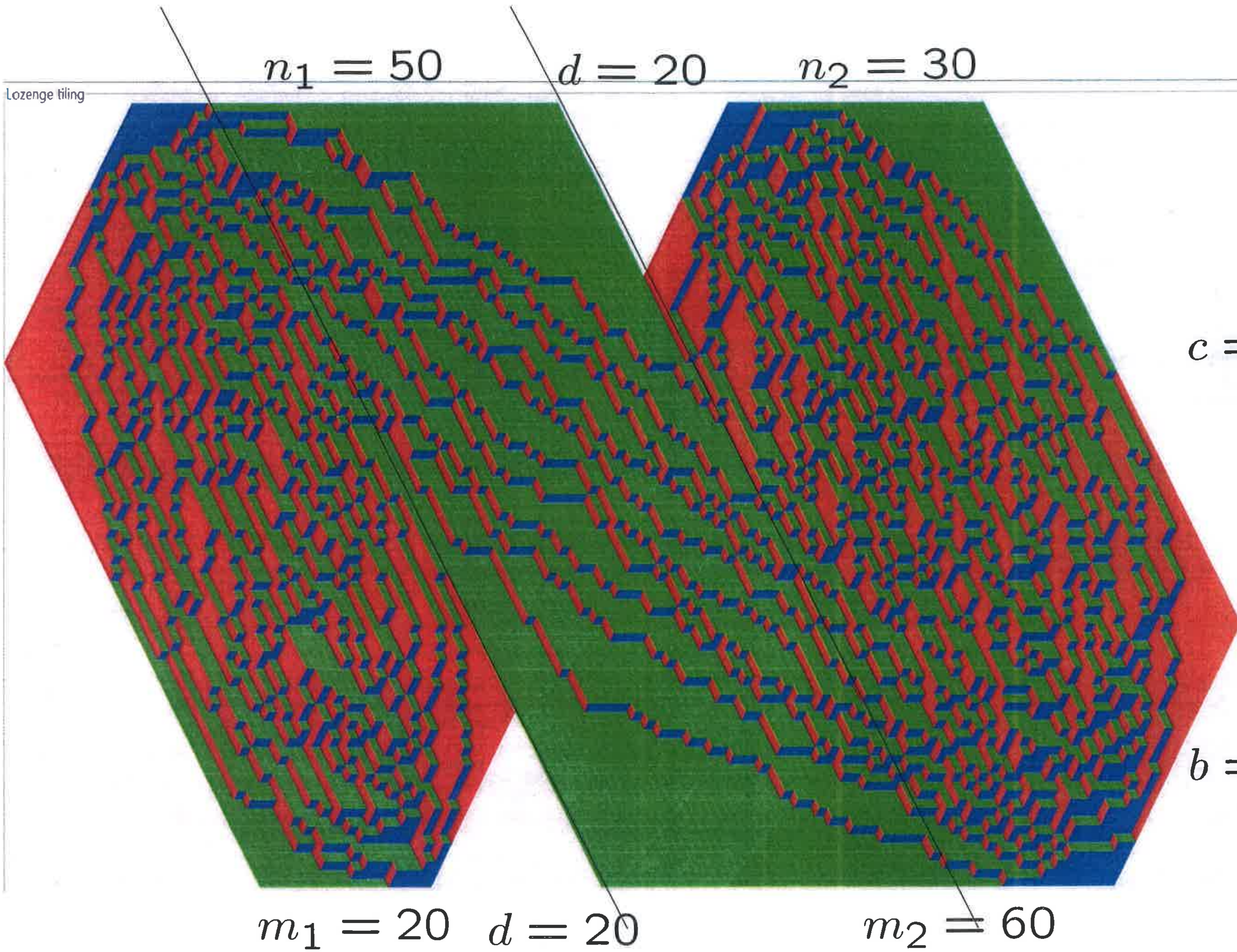
2) Using classical integrable systems like Toda, KP, KdV, etc. to deform problems and using tools of integrability, like Virasoro symmetries and derive relations for undeformed systems which survive, like KdV-like relations.

3) Recently in works of Quastel and Remenik, and also Doussal and Krajenbrink, they derived without any deformations for basic objects related to an important Fredholm determinant and a large deviation functions for KPZ, respectively a "matrix KP equation" and an AKNS equation.

What is going on???

That you see integrable systems in problems whose limits give rise to Painlevé is not totally surprising. However this leads to questions like what linear relation (PDE's) on kernels might lead to (closed) integrable-like PDE's for Fredholm determinants.

Are the various notions of integrability more related than one thinks?



width of strip $= \rho := n_1 - m_1 + b - d = 40$

$\#\{\text{paths connecting the 2 arctic ellipses}\} = r := b - d = 10$

Dimer Models

The is kernel $\mathbb{K}$ going with picture which I do not write. It is believed to both a universal kernel and also a master kernel. It has required some effort to show both statements. To show the first requires taking limits in cases with the necessary complexity and to show the latter requires showing all universal cases can be derived using suitabe scaling limits. This is prompted one to think about building some general technology involving inverse Kastelyn matrices, which would be amenable to proving limits.