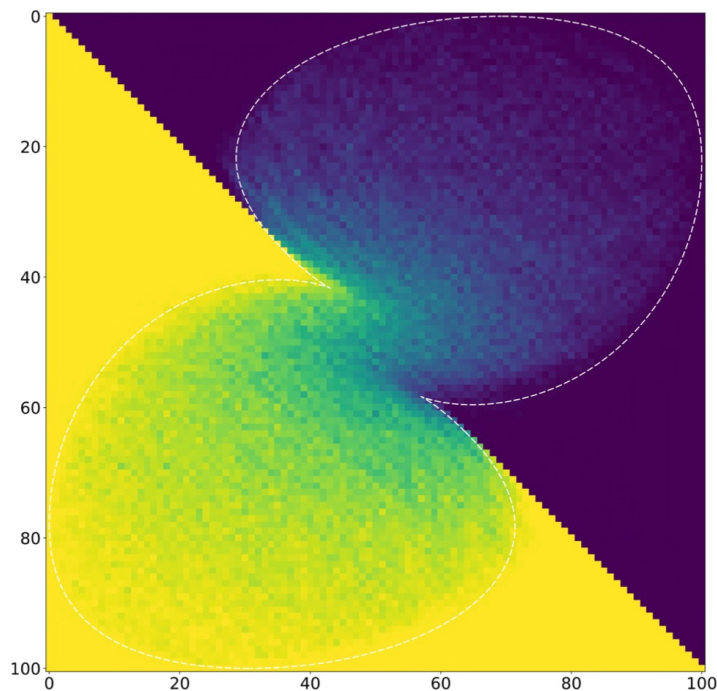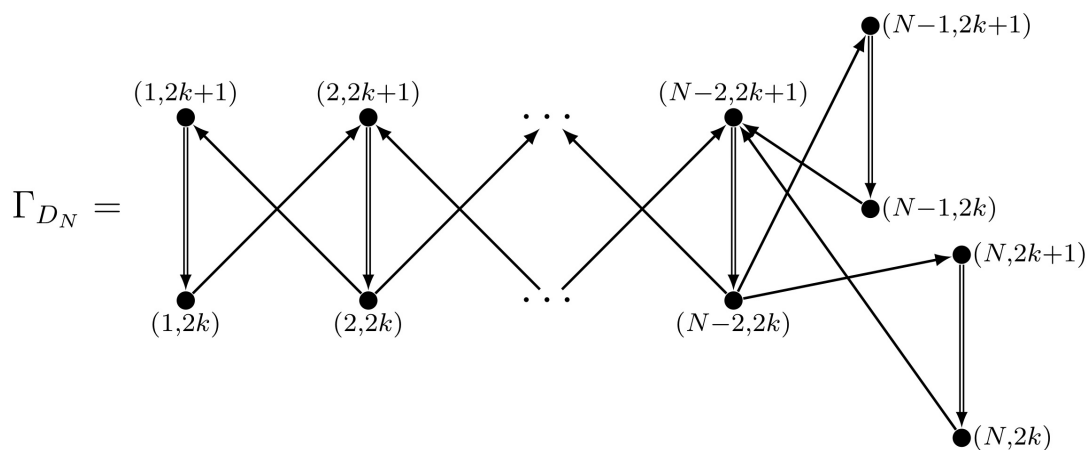# Philippe DI FRANCESCO
(research professor)

- Institut de Physique Théorique, Saclay, France

- Mathematics, University of Illinois, Urbana-Champaign, USA

- Combinatorics — Statistical Physics
    - Integrable lattice models
    - Matrix models of quantum gravity

- Algebraic combinatorics — Cluster Algebras
    - Difference operators / quantum cluster algebras

- limit shapes of the 20 Vertex model with Domain Wall boundaries

- combinatorics of 20 V configurations and domino tilings of various shapes

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$$\Gamma_{D_N} =$$

- Cluster algebras for Macdonald operators in all types

- Discrete Toda integrable systems