# Slava Rychkov

- Staff 5 yr starting now
- Permanent at LPT Ecole Normale Supérieure (Paris)
- Expertise:
  - *BSM pheno (EWSB, Higgs, collider Black Holes)*
  - *High energy scattering in Quantum Gravity*
- Current research project (2008 -):

  **Bootstrap approach to CFT in D=3,4**

# QFT-LAND

Perturbative QFT
(high energy QCD, SM)

2D
string worldsheet

Strongly coupled,
non-SUSY,
non-integrable, small N

SUSY

Large N
(AdS)

**LATTICE**

Integrability
(N=4 SYM)

Progress is possible for **Conformal** Field Theories

Conformal symmetry - generic property of RG fixed points

Any CFT characterized by two sets of numbers:

- spectrum of operator dimensions $\Delta(O_i)$
- coupling constants (3-point functions) $\lambda(O_i O_j O_k)$

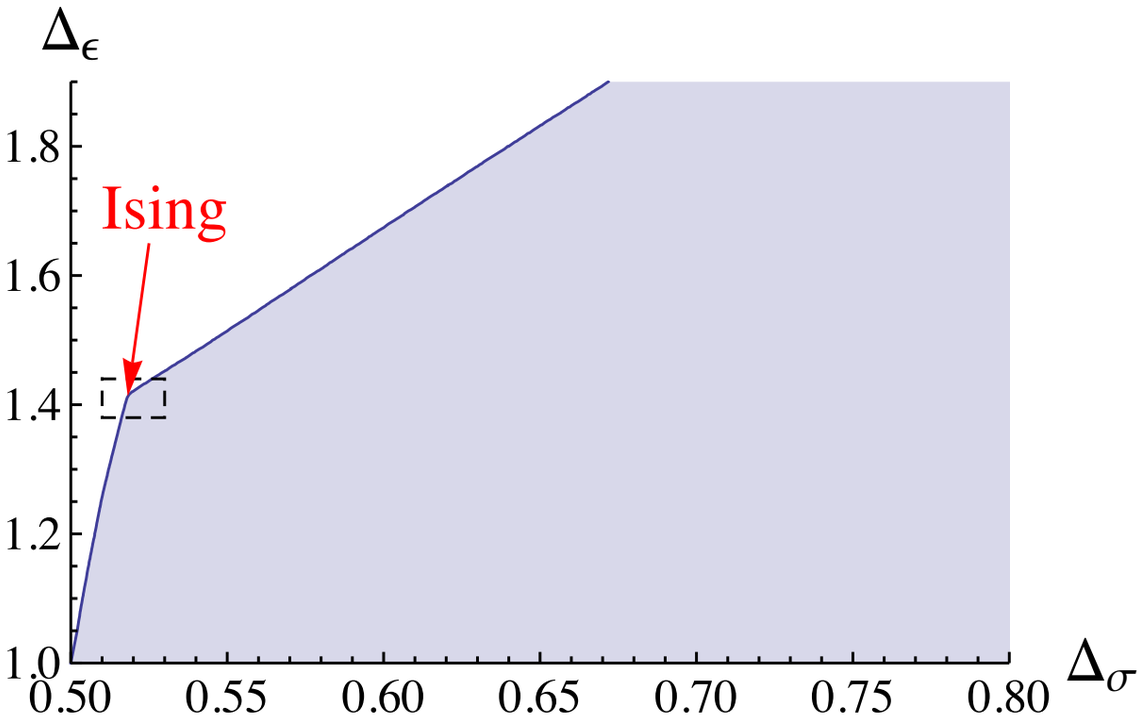
+ consistency conditions

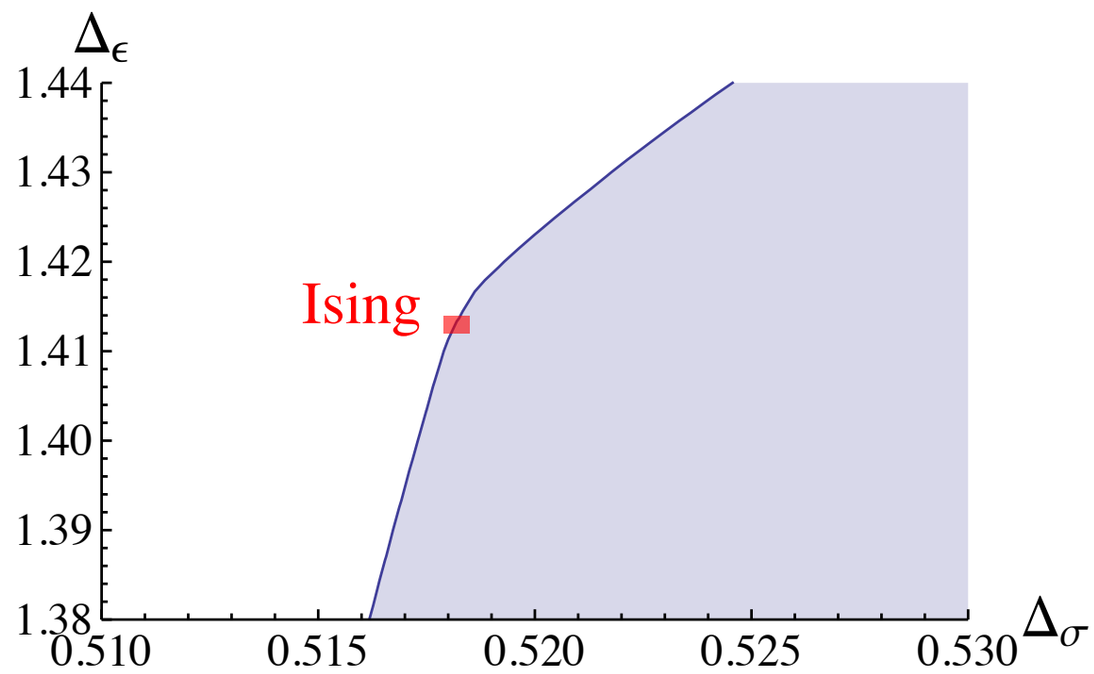
**should be enough to essentially fix the theory**

(up to discrete choices)

*A bit like classifying Lie algebras...*

- Shown to work in D=2 a long time ago [Belavin, Polyakov, Zamolodchikov'84]
- Progress in D=3,4 only recently (starting 2008)
- Currently focused on solving critical 3D Ising model




•[El-Showk, Paulos, Poland, Simmons-Duffin, S.R.,, Vichi'2012]