

Statistical Physics 2 : Disordered Systems and Interdisciplinary Applications

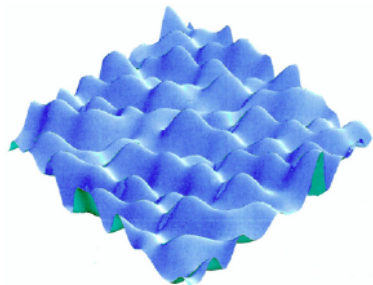
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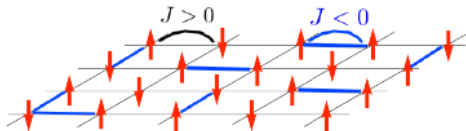
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Disordered systems

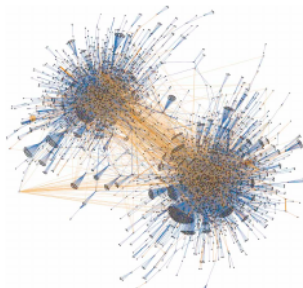
Random Landscapes

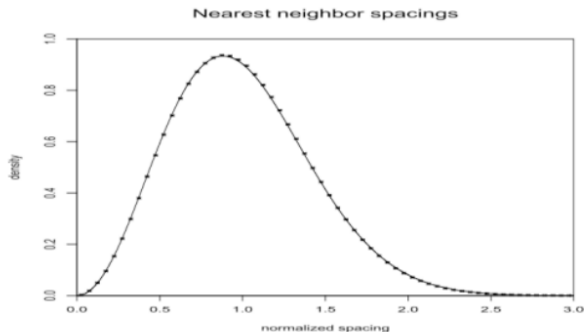


Random Systems



Random Networks





Spacing distribution of :

- Eigenvalues of random matrices
- Energy levels of condensed matter systems
- Zeroes of Riemann zeta function

- (Spin-)Glasses
- Localization transition
- Random graphs
- Applications to
 - computer science (coloring problem)
 - information theory (error-correcting codes)

- Probability
- Random matrices
- Replica method

- Friday afternoon, L 367, 2.00 - 5.30 (\approx 1h40 lecture, 1h40 TD)
- Texts of the exercises given in advance (to be prepared)
- + Facultative “homeworks”
- References, Exercices + some solutions will be on
www.phys.ens.fr/spip.php?article2365

- Reminder on probability, sums and maxima of random variables
- Introduction to disordered systems
- Spin-glasses, replica method
- Effect of disorder on phase transitions
- Random graphs
- Applications to computer science and information theory
- Random matrices
- Localization problems
- Out of equilibrium dynamics