

# Field Disorder and Universality Classes in the Transverse-Field Ising Ferromagnet: A Two-Dimensional Investigation

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## 2D TFIF with Field Disorder

Hamiltonian

$$H = -J \sum_{\langle ij \rangle} \sigma_i^z \sigma_j^z - \sum_i \Gamma_i \sigma_i^x$$

on the  $L \times L$  square lattices

with probability distribution

$$P(\Gamma_i) = \begin{cases} \Gamma_{max}^{-1}, & \text{for } 0 < \Gamma_i < \Gamma_{max} \\ 0, & \text{otherwise} \end{cases}$$

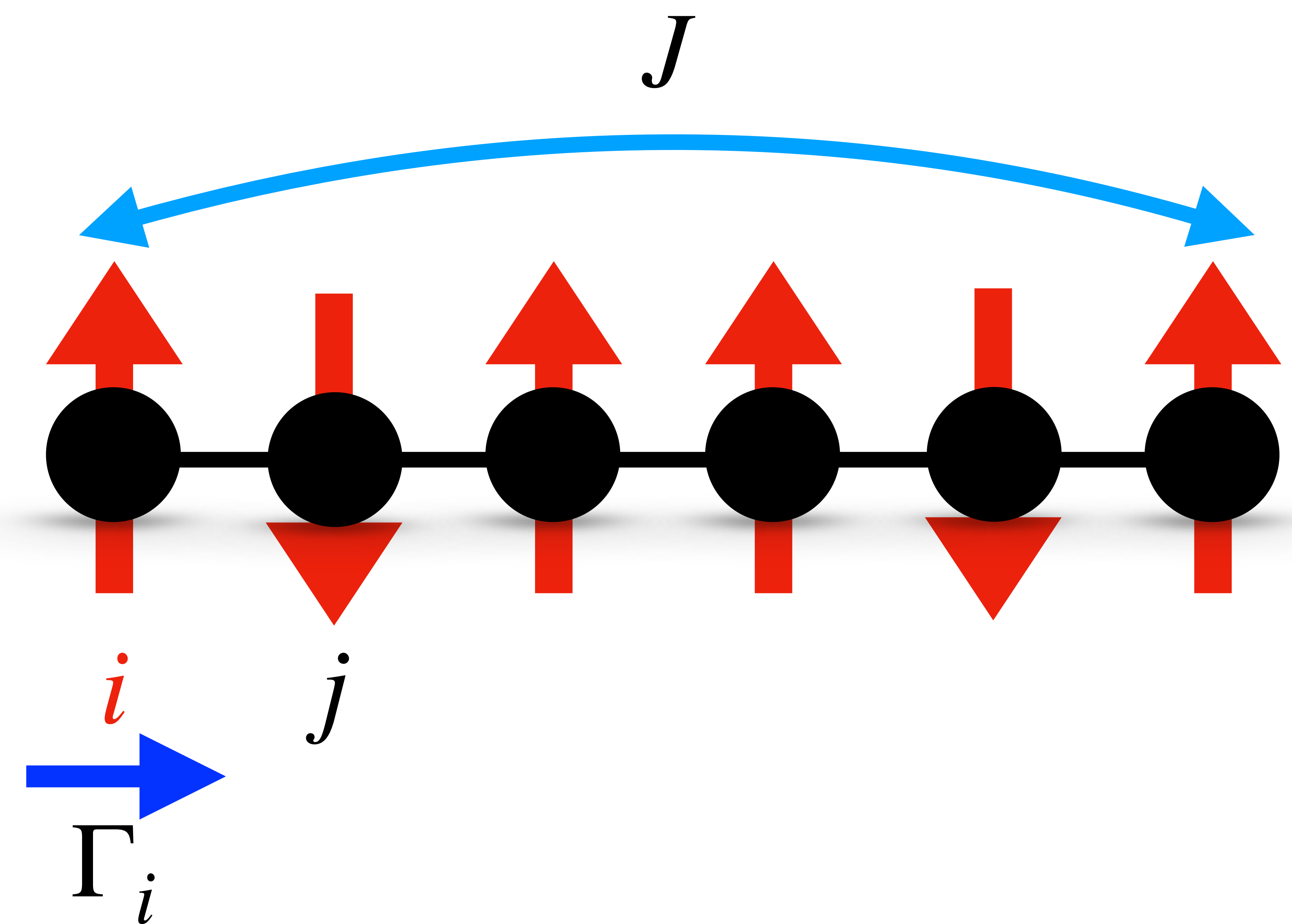


Fig 1. Schematic representation

- Performed **quantum Monte-Carlo simulation** with path-integral representation in the **continuous-time limit**.
- We currently estimate critical point,  $\Gamma_c \approx 13.7$ , and dynamic critical exponent,  $z \simeq 2$ .