

# On the asymptotics of the free energy of directed polymers on hierarchical lattice

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We consider the directed polymer on hierarchical lattices with i.i.d. random potential attached to each bond. Hierarchical lattice is a graph constructed recursively by a branching number  $b$  and a segment number  $s$ . It is known that the free energy  $\Psi_H(\beta)$  exists and is of order  $-\beta^{2/\alpha}$  when  $b < s$  where  $\alpha = \frac{\log s - \log b}{\log s}$ , and  $\log |\Psi_H(\beta)|$  is of order  $-\beta^{-1}$  when  $b = s$  as  $\beta \rightarrow 0$ . In this talk, we will look at the asymptotics of  $\Psi_H(\beta)$  when  $b < s$ .