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Wave-packet spreading in the disordered Su-Schrieffer-Heeger chain

26E RENCONTRE DU NON LINÉAIRE

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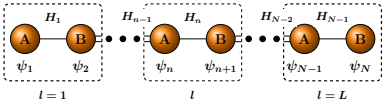
Phase diagram in the disordered SSH chain

Schematic of the SSH chain

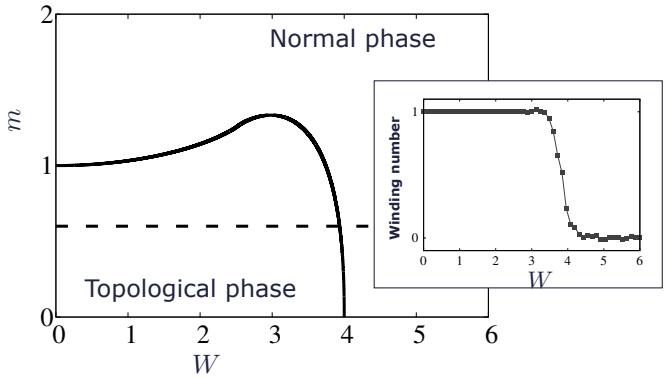


Equations of motion

$$i\dot{\psi}_n = H_n\psi_{n+1} + H_{n-1}\psi_{n-1}$$

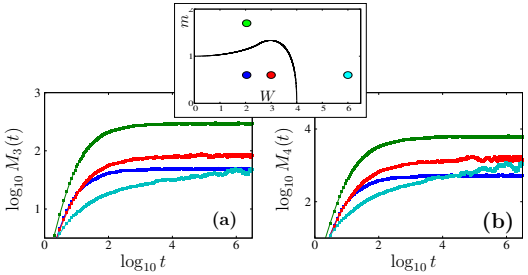
$$H_{n-1} = 1 + \frac{W}{2}\epsilon_n, \quad H_{n-1} = m + W\epsilon_n$$

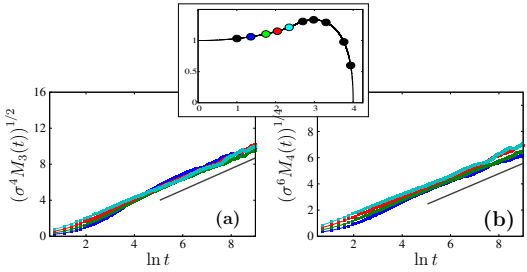
$$\epsilon_n \in [-0.5, 0.5], \quad \mathcal{P}_\epsilon = 1$$



Question. Can the long-time dynamics of localized wave-packets acts as topological indicator?

$$|\psi_{n_0}(0)|^2 = \delta_{n,n_0}, \quad M_q(t) = \sum_n |n - n_0|^q |\psi_n(t)|^2$$





Conclusion. The long-time dynamics of localized wave-packets only detects topological transitions.