List of Figures

List of Abbreviations

DL	**D**ynamical **L**ocalization
QCP	**Q**uantum **C**ritical **P**oint
BEC	**B**ose **E**instein's **C**ondensate
TDPT	**T**ime **D**ependent **P**erturbation **T**heory
BW	**B**rillouin **W**igner
BGS	**B**ohigas-**G**iannoni-**S**chmit
CBH	**C**ambell-**B**aker-**H**ausdroff
DKT	**D**ouble **K**icked **T**op
SKT	**S**ingle **K**icked **T**op
DOS	**D**ensity **O**f **S**tate
PR	**P**articipation **R**atio
HCB	**H**ard **C**ore **B**oson
SF	**S**uper**F**luid
MI	**M**ott **I**nsulator
SKHCB	**S**ingle **K**icked **H**ard **C**ore **B**oson
DKHCB	**D**ouble **K**icked **H**ard **C**ore **B**oson
CKT	**C**oupled **K**icked **T**op
FP	**F**eingold **P**eres

List of Symbols

$U(t_f \to t_i)/U(t)$	Time evolution operator
$\mathcal{U}$	Unitary operator
$G(t)$	Periodic Kick operator
H_{eff}	Effective time independent Hamiltonian
H_{VV}	Effective Hamiltonian by Van Vleck method
H_{BW}	Effective Hamiltonian by Brillouin-Wigner Method
$H(t)/H$	Time dependent Hamiltonian
$\mathbb{H}$	Hilbert space
$\mathbb{T}$	Space of time periodic functions
H_0	Undriven Hamiltonian
$V(t)$	Periodic time dependent potential
E	Energy
$\psi(x,t)$	Wave function
$\hbar$	Plank's constant
$\mathcal{F}$	Floquet operator
T	Time period
ω	Driving frequency
$\|\Phi(t)\rangle$	Floquet state/Floquet Mode
ϵ_α	Quasienergy
V_0	Time constant Fourier Coefficient of $V(t)$
V_n/V_{-n}	n^{th}-order Fourier Coefficient of $V(t)$

$H_{m,n}$	Fourier transform of the Hamiltonian in BW method
α	Angle in DKT/Kicking strength in HCBs system
η	Twisting about the z axis in DKT
$j_i' s$	Angular momentum operator or SU(2) operator
j	Spin
d	Dimension
J_+	Ladder operator
D_q	Fractal dimension
$C_{\overline{m}}^{(n)}$	Component of the n-th eigen state
$\tilde{P}(l)$	Box probability of the eigen state
τ_q	Scaling exponent
q	Scaling Parameter
ϕ	Magnetic flux strength
γ	Hopping strength
$b_l^\dagger/f_l^\dagger$	Bosonic/Fermionic creation operator
b_l/f_l	Bosonic/Fermionic annihilation operator
l/L	Lattice site
$\tilde{b}_k/\tilde{b}_{k'}$	Fourier component of bosonic operator
H_k	Hamiltonian in momentum space for definite value of k
k	Momentum
$\sigma_x, \sigma_y, \sigma_z$	Pauli's matrices
V_k	Potential in momentum space for a definite value
ν	Boost/Twist
H_ν^k	Boosted Hamiltonian in momentum space
$\widehat{j}$	Current operator
$\widehat{j}_k$	Current operator in momentum space

$\mathcal{T}$	Time ordering
$\hat{l}$	Unit vector in SKHCB and DKHCB system
l_x, l_y, l_z	Component of unit vector $\hat{l}$
$\mu_k^{\pm}$	Quasienergy of Floquet operator in HCB system
$J(nT)$	Current flow through the system of periodically driven HCB
$J(\infty)$	Asymptotic current
J_{sat}	Saturated current
W_d	Work done on the system of periodically driven HCB
$W(\infty)$	Asymptotic work done
W_{sat}	Saturated work done
Δ	Time interval between two kicks
$F(t)$	Driving Scheme
Ω_i	Angular rotation rate or angular velocity
κ_i	Tortional rate
$\tilde{\epsilon}$	Rate of coupling between two individual systems
C	Chirality operator
P	Permutation operator
Ω	Wave operator
$\mathcal{P}$	Projection operator