

List of frequently used symbols

a	period of wires in lateral superlattice
B	magnetic field
B_c	magnetic correlation field
B_\perp	component of magnetic field perpendicular to 2DEG layer
C	capacitance
d	dimension
D	diffusion constant
e	electron charge
E	electric field strength; energy
E_c	correlation energy
E_F	Fermi energy
f	frequency
$f(E, T)$	Fermi distribution function
g	interaction parameter
G	Conductance
$h = 2\pi\hbar$	Planck's constant
I	current
j	current density
k_B	Boltzmann constant
k_F	Fermi wavenumber
l, ℓ_e	elastic mean free path
l_c	cyclotron radius
l_φ	phase coherence length
L	length
L_c	distance between critical hops
L_T	thermal diffusion length
m	electron mass; effective electron mass
m^*	effective electron mass
n	carrier concentration; subband index
n_L	Landau index
N	number of occupied bands
p	specularity factor
q_F	Fermi wavenumber
Q	charge
r_c	cyclotron radius
R	resistance; radius of curvature
R_A	resistance antisymmetric with respect to reversal of magnetic field
R_H	Hall resistance
R_L	longitudinal resistance
R_S	resistance symmetric with respect to reversal of magnetic field
$S(\mu, T)$	thermopower
t	thickness; time
T	temperature, transmission probability
T_0	activation temperature

v_D	drift velocity
v_F	Fermi velocity
V_g	gate voltage
V_{SD}	source–drain voltage
V_{th}	threshold voltage
w	width
w_{eff}	effective width
Δ_ξ	level spacing in the localized regime
ϵ	energy
$\Theta(x)$	Heaviside function
λ_F	Fermi wavelength
μ	chemical potential
μ_D	drift electron mobility
μ_H	Hall mobility
ν	filling factor
ξ	localization length
Π	Peltier coefficient
ρ	resistivity
σ	conductivity
τ	mean elastic scattering time
τ_ϕ	phase coherence time
τ_{SO}	spin–orbit scattering time
ω	frequency
ω_c	cyclotron frequency

List of abbreviations

1D	one-dimensional
2D	two-dimensional
2DEG	two-dimensional electron gas
3D	three-dimensional
AB	Aharonov–Bohm
AF	aperiodic conductance fluctuations
AT	Anderson transition
CB	Coulomb blockade
CDW	charge density wave
DQW	double quantum well
DX	deep impurity state
EBL	electron beam lithography
EMF	electromotive force
FET	field effect transistor
FIB	focussed ion beam
FIR	far infrared
FQHE	fractional quantum Hall effect
IM	ion milling
IQHE	integer quantum Hall effect
IR	infrared
LED	light emitting diode
MBE	molecular beam epitaxy
MC	magneto conductance
MFP	magneto fingerprint
MOSFET	metal oxide semiconductor field effect transistor
MOVPE	metal organic vapour phase epitaxy
MPR	magneto phonon resonance
MR	magneto resistance
NNH	nearest neighbour hopping
QD	quantum dot
QHE	quantum Hall effect
QPC	quantum point contact
QW	quantum well
PC	persistent current
RIE	reactive ion etching
RTS	random telegraph signal
SAW	surface acoustic wave
SdH	Shubnikov–de–Haas
SIMOX	separation by implanted oxygen
SL	strong localization
SO	spin–orbit
STM	scanning tunneling microscope
UCF	universal conductance fluctuations
VRH	variable range hopping
WC	Wigner crystal
WL	weak localization
WNW	wide-narrow-wide