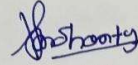


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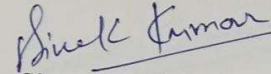
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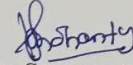


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List of Abbreviations and Symbols

V_{dc}	DC bus voltage
i_{bat}	Battery output current
i_{pv}	PV output current
i_{load}	DC load intake current
i_{dc}	DC current of inverter
C	DC link capacitor
i_{dc}	e_d, e_q Inverter output direct and quadrature voltage
i_{invd}, i_{invq}	Inverter output direct and quadrature current component
V_{cd}, V_{cq}	Direct and Quadrature axis components of filter capacitance voltage
i_d, i_q	Active, Reactive components of inverter output current
R_d	Damping resistance
ω	Fundamental angular frequency
L_1, L_2	Filter inductance
R_1, R_2	Parasitic resistances of the filter inductances
C_f	Filter capacitance
U_d, U_q	Direct and Quadrature component of grid voltage
P_g	Grid active power sharing
V_{dcref}	DC bus reference voltage
i_{dref}, i_{qref}	Reference component of inverter output current
∂	Fractional coefficient
$x, x_e, x_{ref}, x_{e\Delta}$	System states, error states, reference state value and state error deviation
J	System input matrix
S_i, S_{dis}	Sliding surfaces super twisting control and disturbance observer
k_i	Positive sliding mode control gains for $i=1,2,3$.

k_{pr}	Positive sliding mode control gain for power rate reaching law.
$\lambda_{min}(K_i)$	Minimum eigen value of matrix K_i
U, U_{nom}, U_{int}	Control input, normalized control input and integral control input.
$\mathcal{L}, \mathcal{L}_1, \mathcal{L}_a, \mathcal{L}_A$	Lipschitz coefficients
V	Lyapunov candidate
δ	System input matrix multiplier
T_{ie}	Inter execution time between two consecutive events
Φ, Φ_m, Φ_{um}	Matched/Unmatched disturbances
G	Transpose input system matrix
β_{int}	Integral term of super twisting surface
m	Integral Coefficient
v_d	Direct component of reference signal through ETSTSMC
$\ \cdot\ $	Signals second norm
δ	Power angle
ω	Rotor speed concerning the synchronous reference
ω_0	Synchronous speed
H	Inertia constant
P_M	Mechanical power input
D	Damping constant
P_e	Active electrical power output
E_q	Field variable proportional to field flux linkages
T_{do}	d –axis transient open-circuit time constant
x_d	d –axis synchronous reactance
x'_d	d –axis transient reactance
E_{fd}	Equivalent field excitation voltage
E_d	Damper variable proportional to the d –axis damper flux linkages
T_{qo}	q –axis transient open-circuit time constant

x_q	q –axis synchronous reactance
x'_q	q –axis transient reactance
T'_{do}	d –axis sub transient open-circuit time constant
T'_{qo}	q –axis sub transient open-circuit time constant
K_A	Regulator gain
T_A	Regulator time constant
\mathbb{R}	Set of real numbers
$(.)^T$	Transpose of a matrix
$(.)^{-1}$	Inverse of a matrix
F'	First-order derivative of a function F
$sign$	Standard signum function
$ \cdot $	Denotes the mode value
$\lambda(.)$	Eigenvalue
I	Identity matrix
$svd(.)$	Singular value of a matrix
$\max(.)$	Maximum value of a signal