

Appendix A

Parameter interpretation table

Serial number	Parameter	Meaning
1	θ_k	k -moment parameter matrix
2	$R_{\theta,k}$	Ohmic internal resistance
3	$R_{D,k}$	k -moment polarization internal resistance
4	$C_{D,k}$	k -moment polarized capacitance
5	$U_{D,k}$	k -moment polarization voltage
6	$I_{L,k}$	Load electric current at k -moment (discharge as plus, charge as minus)
7	$U_{t,k}$	Instantaneous terminal voltage
8	$U_{oc,k}$	Open circuit voltage of power battery
9	a_i	OCV-SOC Polynomial coefficient
10	Δt	Data sampling interval
11	e_k^x	k -moment state innovation matrix
12	e_k^θ	k -moment parameter innovation matrix
13	K_k^x	State matrix gain coefficient
14	K_k^θ	Gain coefficient of parameter matrix
15	P_k^x	State estimation error covariance matrix
16	P_k^θ	Parameter estimation error covariance matrix
17	x_k	k -moment state matrix
18	y_k	k -moment observation matrix
19	z_k	k -moment SOC value
20	η_i	Coulomb efficiency is affected by discharge rate, temperature and capacity.
21	C_a	Maximum available capacity of power battery in current state
22	m	quantity volume points, twice the dimension of the state vector
23	q_k^x	System state process noise
24	Q_k^θ	Noise variance matrix of parametric process
25	Q_k^x	Noise variance matrix of State process
26	r_k^x	Observation noise of system parameter
27	R_k^θ	Noise variance matrix of parameter observation
28	R_k^x	Noise variance matrix of parameter observation
29	Δx	State residual vector
30	Δy	Observation residual vector
31	λ_i	Random weighting factor

Appendix B

Abbreviation list

Serial number	Abbreviations	Full name
1	SOC	State of Charge
2	EV	Electric Vehicle
3	SVD	Singular Value Decomposition
4	EKF	Extended Kalman Filter
5	OCV-SOC	Open Circuit Voltage-State of Charge
6	CKF	Cubature Kalman Filter
7	UKF	Unscented Kalman Filter
8	SCKF	Square root Cubature Kalman Filter
9	ASCKF	Adaptive Square root Cubature Kalman Filter
10	ARWCKF	Adaptive Random Weighting Cubature Kalman Filter
11	RC	Resistance-Capacitance
12	BMS	Battery Management System
13	AIC	Akaike Information Criterion
14	FRLS	Fast Recursive Least Square
15	DST	Dynamic Stress Test
16	FUDS	Federal Urban Driving Schedule