

NOMENCLATURE

Symbols

\bar{a}	complex number.
\hat{a}	measurement variable.
\tilde{a}	primitive element.
*	modified admittance matrix.

Sub-indexes

i, k	denotes buses i and k .
j	denotes measurement j .

Super-indexes

sh	shunt admittance.
p, q	phase wire, phase and neutral wire.
a, b, c, n	phases a, b, c and neutral wire.
r, i	real and imaginary part.
T	transpose matrix.

Scalar Variables

θ	angle with respect to the PMU ref. (rad, deg)
d_{ik}	distance between buses i and k (feet)
df	degrees of freedom
Δz	residual vector $z_j - h_j(x)$
ϵ	convergence criteria
J	WLS state estimation objective function
ν	iteration index
μ	uniformly distributed random variable
σ_j^2	variance of measurement j
n_b, n_t	number of monitored and total buses.
NEV	Neutral to Earth Voltage v_k^n (V)
n_l	noise level in percent (%)
m	dimension of measurement vectors.
pV	probability-value.
u	dimension of state of the system vector x .

Vector or Matrix Variables

A	linear matrix of H
B	system susceptance matrix (s)
d_k, e_k	vectors with non-linear elements of H
f	branch current vector (A)
G	system conductance matrix (s)
G	Gain matrix
$h(x)$	calculated measurement vector
H	Jacobian matrix of $h(x)$
i	injected current vector (A)
r	grounding resistances vector (Ω)
v	voltage vector (V)
W	matrix of weightings
O, o	matrix and vector of null values
x	state of the system vector
Y	System admittance matrix (s)
\tilde{Y}_{ik}	primitive series admittance matrix at $i - k$ (s)
\hat{z}	measurement vector
z_0	no-noise measurement vector