

ELECTRICAL TRANSIENTS IN POWER SYSTEMS

[illegible]

Review of line parameters for simple configurations: series resistance, inductance and shunt capacitance; bundle conductors: Equivalent GMR and equivalent radius.

Modal propagation in transmission lines: modes on multiphase transposed transmission lines, α - β -0 transformation and symmetrical components transformation, modal impedances; analysis of modes on transposed lines; effect of ground return and skin effect; transposition schemes.

MODULE –IV: PARAMETERS OF UNDERGROUND CABLES (09)

Distinguishing features of underground cables: technical features, electrical parameters, overhead lines versus underground cables; cable types: Series impedance and shunt admittance of single core self-contained cables, impedance and admittance matrices for three phase system formed by three single core self contained cables, approximate formulas for cable parameters.

MODULE –V: COMPUTATION OF POWER SYSTEM TRANSIENTS – EMTP (09)

Digital computation of line parameters: Why line parameter evaluation programs; Salient features of mt line: Constructional features of that affect transmission line parameters, elimination of ground wires bundling of conductors; Principle of digital computation of transients: features and capabilities of EMTP; steady state and time step solution modules: basic solution methods.

V. Text Books

1. Allan Greenwood, “Electrical Transients in Power System”, Wiley& Sons Inc. New York, 1st Edition, 1991.
2. Harold A Peterson, “Transient in Power Systems”, McGraw Hill, 1st Edition, 1966.

VI. Reference Books:

1. Kuffel and Abdullah, “High Voltage Engineering”, PHI, 1st Edition, 2000.
2. Rakesh D Begamudre, “EHV AC Transmission Engineering”, PHI, 1st Edition, 2006.
3. Naidu M S and Kamaraju V, “High Voltage Engineering”, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2nd Edition, 2004.
4. Hermann W. Dommel, EMTP Theory Book, second Edition, Microtran Power System Analysis Corporation, Vancouver, British Columbia, Canada, May 1992, Last Update: April 1999.

VII. Web References:

1. <https://www.EMTP Literature from www.microtran.com>
2. <https://www.smartech.gatech.edu/bitstream/handle/1853/14488>
3. <https://www.weibull.com/basics/reliability.htm>

VIII. E-Text Books:

1. <https://www.download.springer.com/static/pd>
2. <https://www.web.mit.edu/energylab/www/pubs/el99-005wp.pdf>