

Transient Voltage Distribution on the Single Phase Transmission Line under Short Circuit Fault Effect

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Abstract : Single phase transmission lines are used to transfer data or energy between two users. Transient conditions such as switching operations and short circuit faults cause the generation of the fluctuation on the waveform to be transmitted. Spatial voltage distribution on the single phase transmission line may change owing to the position and duration of the short circuit fault in the system. In this paper, the state space representation of the single phase transmission line for short circuit fault and for various types of terminations is given. Since the transmission line is modeled in time domain using distributed parametric elements, the mathematical representation of the event is given in state space (time domain) differential equation form. It also makes easy to solve the problem because of the time and space dependent characteristics of the voltage variations on the distributed parametrically modeled transmission line.

Keywords : energy transmission, transient effects, transmission line, transient voltage, RLC short circuit, single phase

Conference Title : ICACSE 2018 : International Conference on Applied Computer Systems Engineering

Conference Location : Dublin, Ireland

Conference Dates : January 30-31, 2018