

Title (en)

COMPUTER-IMPLEMENTED METHOD FOR SIMULATING AN ELECTRICAL CIRCUIT

Title (de)

COMPUTERIMPLEMENTIERTES VERFAHREN ZUR SIMULATION EINER ELEKTRISCHEN SCHALTUNG

Title (fr)

PROCÉDÉ MIS EN OEUVRE PAR ORDINATEUR POUR LA SIMULATION D'UN CIRCUIT ÉLECTRIQUE

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Application

EP 19805278 A 20191115

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Abstract (en)

[origin: WO2020099659A1] The invention discloses and describes a computer-implemented method (1) for simulating an electrical circuit (2) by means of at least one computing unit (3), wherein the electrical circuit (2) comprises circuit components (L, R, Ti) having switch elements (Ti), the switch elements (Ti) being capable of assuming either a conductive or a blocking switched state. The circuit (2) is described by a mathematical representation MR, and the circuit is calculated on the computing unit (3) for each overall switched state (SSTi) by numerically solving the mathematical representation MR describing the overall switched state (SSTi). A simple way of modelling the circuit (2) with a plurality of - at best with all - combinations of the overall switched states (SSTi) of the switch elements (Ti) and thus with a plurality of - at best with all - overall switched states (SSTi) in a mathematical representation and of numerically calculating same is realised in that a conductive switch element (Ti) in the circuit is represented by a switch coil (7), in that a blocking switch element (Ti) in the circuit (2) is represented by a switch capacitor (8), in that the electrical behaviour of the switch coil (7) and the switch capacitor (8) is described by structurally identical time-discrete switch equations iS, k , such that the structurally identical time-discrete switch equations iS, k for the switch elements (Ti) are used to provide a switched-state-independent time-discrete state space representation H, Φ, Cd, Dd for all total switched states (SSTi) of the circuit (3), and the simulation is performed on the computing unit (3) on the basis of the switched-state-independent time-discrete state space representation H, Φ, Cd, Dd for all total switched states (SSTi) of the circuit (2).

IPC 8 full level

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