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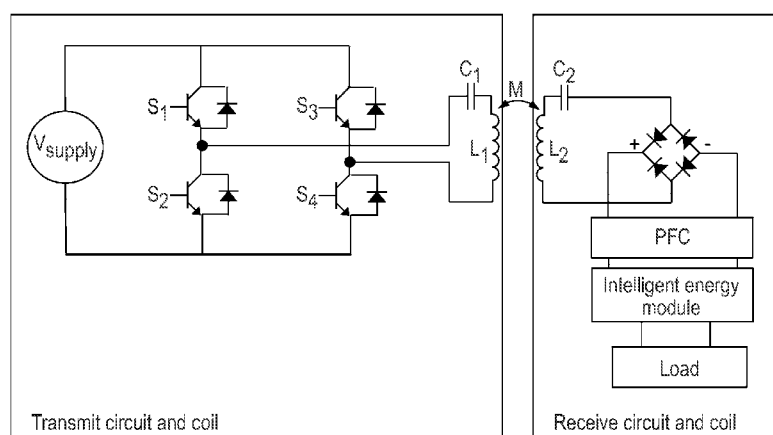
(54) **Title:** NONLINEAR SYSTEM IDENTIFICATION FOR OBJECT DETECTION IN A WIRELESS POWER TRANSFER SYSTEM

FIG. 1

(57) **Abstract:** A method of detecting whether a foreign object is near a transmit coil in a wireless power transfer system (WPTS), the method involving: applying a pseudo-random signal to the transmit coil; while the pseudo-random signal is being applied to the transmit coil, recording one or more signals produced within the WPTS in response to the applied pseudo-random signal; by using the one or more recorded signals, generating a dynamic system model for some aspect of the WPTS; and using the generated dynamic system model in combination with stored training data to determine whether an object having characteristics recognizable from the stored training data as characteristic of the foreign object is near the transmit coil.