PREDICTION OF UNUSUAL DYNAMICAL BEHAVIOR
OF PERMANENT-MAGNET SYNCHRONOUS MOTOR

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ABSTRACT This paper presents mathematical equations describing the unusual dynamical behaviour of a permanent-magnet synchronous motor. The dynamical behaviour of the proposed machine has been defined both in real three phase co-ordinates and in Cartesian co-ordinates systems. The dynamic phenomena occurring in the machine for different values of its parameters, with particular reference to the possibility of bifurcation and chaotic states have been analysed. The autocorrelation and the autoregressive functions have been used for the prediction of the unusual dynamical behaviour of the permanent-magnet synchronous motor.

Keywords: synchronous machines, permanent magnets, vehicle drive, dynamic states