Modelling of Induction Motor Including Skew Effect Using MWFA for Performance Improvement

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Abstract : This paper deals with the modelling and simulation of the squirrel cage induction motor by taking into account all space harmonic components, as well as the introduction of the bars skew, in the calculation of the linear evolution of the magnetomotive force (MMF) between the slots extremities. The model used is based on multiple coupled circuits and the modified winding function approach (MWFA). The effect of skewing is included in the calculation of motors inductances with an axial asymmetry in the rotor. The simulation results in both time and spectral domains show the effectiveness and merits of the model and the error that may be caused if the skew of the bars is neglected.