

Seminario: **“Tooth Contour Method for Electric Machine Analysis”**

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Lugar: Sala 1.3.D.16 (Edificio Agustín de Betancourt, Leganés).

Días: 30 noviembre a 2 de diciembre de 2016

Hora: 10,00 horas

Description

This course provides theoretical foundations of Tooth Contour Method, which was developed at MPEI Dep. of Electromechanics in late 70-s and is used now for electric machine analysis by researchers and PhD-students of some Russian universities. Tooth Contour Method (TCM) is based on fundamental features of air-gap magnetic field of most electric machines with tooth structure, which allows to develop an equivalent circuit (lumped parameters circuit) of electric machine magnetic circuit. Such equivalent circuit combines high speed of calculations inherent to circuit analysis with high accuracy of total magnetic field analysis inherent to field analysis. Such equivalent circuit can be used in optimization procedures, as it requires few computation time, while taking into account magnetic circuit saturation, double-side core slotting, real winding distribution along slots and core movement. Slot leakage and air-gap harmonics (differential leakage) due to winding distribution and core slotting are all included in total flux-linkages of windings, which are the natural result of electromagnetic analysis. End turns leakage is not included in the model and corresponding flux-linkage should be added separately.

The course consists of short introduction to TCM, 2 parts and final description of practical approach of TCM. First part provides theoretical foundations of TCM and its main features, which are demonstrated on electric machine with non-saturated magnetic circuit. Second part demonstrates TCM application to general theory of electric machines and is aimed on better understanding of electromechanical power conversion processes by last-year bachelor students.