הטכניון – מכון טכנולוגי לישראל
הפקולטה להנדסת מכונות

TECHNION – Israel Institute of Technology
Faculty of Mechanical Engineering

SEMINAR - סמינר

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 1.08.16 (כו' בתמוז, תשע"ו), בבניין דן-קאהן, קומה 0, אודיטוריום 1 , 14:30.

ירצה:

Dr. Yuri Kadin

Senior Researcher, Metallic Materials & Ceramics
SKF Engineering & Research Centre
P.O. Box 2350, 3430 DT, Nieuwegein, The Netherlands
yuri.kadin@skf.com

על הנושא:

Finite Elements simulation of crack propagation from subsurface material defects in rolling contact fatigue

The seminar will be given in English

להלן תקציר ההרצאה:

Rolling contact fatigue (RCF) is one of the failure modes of rolling bearings, which is a process of crack initiation followed by crack propagation that eventually leads to spalling of the raceway. The development of subsurface cracks is often associated with pre-existing material defects such as nonmetallic inclusions which, depending on their type, shape, size, as well as their location, may strongly influence crack initiation and initial crack propagation. To understand fatigue damage evolution affected by material defects, numerical simulation by means of 3D finite element modelling is performed of crack propagation from defects of different shape and size in the subsurface region of rolling contact. An automatized re-meshing technique is developed by means of the Python script coupled with environment of the FE code ABAQUS, to enable effective and efficient re-meshing that is required for the simulation of crack propagation. Short crack effect, local plasticity around defect, crack faces friction and residual stress are accounted for in the current modeling. The numerically predicted shape of propagating crack is qualitatively compared to the experimentally observed crack propagated in RCF. Parametric study corresponding to different defects and different rolling contact conditions is presented.

המארח: פרופ' יצחק עציון

בברכה,

שרון אמיר

מרכז הסמינרים