הטכניון – מכון טכנולוגי לישראל **הפקולטה להנדסת מכונות**

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה' 18.08.16 (יד' באב, תשע"ו), בבניין דן-קאהן, קומה 0, אודיטוריום 1, 14:30.

יוצר: עידו זליקוב

מנחה: ד"ר יורי קליגרמן

על הנושא:

Model of contact and wear between high speed moving parts of piezo-drives

The seminar will be given in Hebrew

להלן תקציר ההרצאה:

The Piezoelectric effect in piezoceramics converts electrical field to mechanical strain. The excitation caused by the motor creates a trajectory of the ceramic edge. By coupling the ceramic edge to a stage, a driving force is exerted on the stage, causing its movement. This research will investigate this contact under some assumptions.

The investigated model is a dynamic, plain strain contact between cylindrical body (edge) and a flat (stage). Both bodies are deformable and fully elastic and the bodies might get in and out of contact depending on the relative motion of both bodies. The displacement of the edge is controlled in this case by setting an elliptic trajectory at the edge bottom, while the stage movement is a result of the contact and is only horizontal. The contact between the bodies is frictional, according to the Coulomb dry friction law. The stage is placed on an aluminum table which are connected between them by a double-sided (DS) tape and epoxy glue. The long part of the layer is made from DS tape which is a viscoelastic material and a short part is made from epoxy. The goal of the epoxy is to provide the tangential stiffness of the system.

The local accumulated energy losses due to friction at contact will be used as the criterion of the local wear. Energy losses are evaluated as integral work of local friction force over cyclic sliding distance.
In order to reduce the work done by friction, parametric analysis was done. Both mechanical and geometrical properties of the system were changed: the radius of curvature of the edge and the Young's modulus of both the edge and DS tape was changed. Furthermore, since the DS tape is a viscoelastic material, the effect of its viscosity is also examined.

בברכה,

שרון אמיר שת

מרכז הסמינרים