

## SEMINAR - סמינר

הנד מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתקיים ביום ב' 2.11.15 (כ' בחשוון, תשע"ו), בבניין דן-קאהן, קומה 0, באודיטוריום 1 בשעה 14:30.

ירצה:

**Dr. P.M. Adler**

Metis, UPMC, Paris

על הנושא:

# Transport properties of fractured porous media

להלן תקציר ההרצאה:

After a brief presentation of our works on porous media on the pore scale, I shall address the main topic of this talk.

Fractures which are always present underground drastically influence the transport properties of porous media on the large scale. Applications such as water flows, transport of contaminants, and reservoir models in the oil industry necessitate the prediction of the transport properties of fractured porous media from easily measurable field quantities.

Versatile numerical tools devised to study these properties extensively, will be briefly presented and illustrated. Isotropic networks of uniformly distributed identical fractures are studied first; then, the studies are generalized to anisotropic networks, to fractures distributed according to power laws and to non uniform distributions. The excluded volume of fractures and the number  $\rho'$  of fractures per excluded volume are introduced. When the percolation threshold of the fracture network, and the macroscopic permeability are plotted as functions of  $\rho'$ , they become independent of the fracture shapes, which is a decisive simplification for the applications.

$\rho'$  can be estimated from measurements performed on intersections of fracture networks with lines, planes, and galleries. These intersections are visible on outcrops, cliffs, quarries, wells and tunnels. Some remarkable relations hold for convex fractures of all shapes.

Applications of this approach to several practical cases will be discussed as well as extensions to barometric pumping and wave propagation.

המארח: פרופ' מיכאל שפירא

בברכה,

פרופ' אורי איתן  
מרכז הסמינרים