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

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה׳
4.06.15 (יז׳ בסיון, תשע״ה), בניין דן-קאהן, קומה 0, אודיטוריום 1 , 14:30.

ירצה : לב מיסיוק

מנחה : פרופ׳ יהודה תירוש

על הנושא:

The interrelationship between impact speeds of projectiles and their depth of penetration into metal targets

להלן תקציר ההרצאה:

In the present research work we formulate the ballistic penetration depth vs. impact speeds of rigid projectiles (with varying head-shapes). The targets are semi-infinite rigid-perfectly-plastic metals. Each penetrator head-shape that was simulated in this work has a different geometrical convexity (named universally as 'Rankine shape'). The metal flow that is ejected out of the penetrated target is modelled via the **potential flow theory** at various length-to-width ratios. The upper-bound approach is used here to interrelate analytically the main physical parameters of the penetration, like the interfacial projectile/target friction, target's yield strength, target's density, plastic zone extension around the penetrator, etc. In the first part we compared the head-shapes in terms of mean indentation pressure during the incipient non-steady-state indentation (similar to the situation in Brinnel hardness test), and later enlarged the solution to the full dynamic penetration path till finally the projectile is at rest (starting from impact velocities of at most 1400 m/sec).The test case of a head-shape with equal length and base radius (namely, spherical head) is favourably compared to previous analytical and experimental works taken from the open literature.

A major result is seemingly that we have found the direct influence of the head-shape on the **whole** penetration-depth path. It allows us to track the expenditure of energy of each penetration process for each head-shape. As a practical consequence of our work we can offer **an optimal length to width ratio of a Rankine half-body penetrator for maximum penetration efficiency**.

בברכה,

פרופ׳/מ אמיר שחר

מרכז הסמינרים