

## סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות שתתקיים ביום ד' 12.05.21

(א' בסיון, תשפ"א), בשעה 13:30 באמצעות הזום :

<https://technion.zoom.us/j/93028107656>

מרצה: מיכאל לאופר

מנחה: פרופ' סטיב פרנקל

על הנושא :

### **GPU Accelerated Implicit LES of NACA 0018 Airfoil with Active Flow Control**

The seminar will be given in English

תקציר ההרצאה :

This work applies the state of the art Computational Fluid Dynamics solver – PyFR to perform GPU accelerated Implicit LES simulations of a NACA 0018 Airfoil with steady and unsteady Active Flow Control and compares results to experiments performed by the Flow Control Lab.

While previous attempts at simulating this problem used 2D URANS methods that are not able to numerically resolve the laminar to turbulent transition that is at the heart of this case, this work uses a 3D high order, turbulence resolving, Flux Reconstruction method that is shown to be able to predict non-linear lift curves that have not been successfully predicted for this case.

Additionally, an unsteady pulsed blowing optimization was carried out leading to a greatly reduced total energy consumption for a given lift target.

Lastly, a computational performance analysis is carried out that looks at the current state as well as future of GPU computation for CFD.

בברכה,

סאס מתי ח"פרופ  
הסמינרים מרכז