# נושאים מתקדמים
# 236602
# **Property Testing Boolean Functions**

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| **מרצה:** | | **נאדר בשותי** |
| **דרישות קדם:** | | **הסתברות + אלגברה מודרנית** |
| | **יום ג 16:30-18:30** | |

Property testing algorithms are used to decide if some mathematical object (such as a graph or a boolean function) has a "global" property, or is "far" from having this property, using only a small number of "local" queries to the object.

For example, the following promise problem admits an algorithm whose query complexity is independent of the instance size (for an arbitrary constant $\varepsilon > 0$):

"Given a Boolean function $f$, decide if f is linear function, or $f$ cannot be made linear even after changing its value in
Property testing algorithms are central to the definition of probabilistically checkable proofs, as a probabilistically checkable proof is essentially a proof that can be verified by a property testing algorithm.

## תאור הקורס

- Finite Fields
- Zero Testing, Lower and Upper bounds
- Adaptive learning via Fourier transform
- Adaptive learning via Multivariate Polynomials
- Reductions for Adaptive algorithms
- Non-Adaptive learning via Fourier transform
- Non-Adaptive learning via Algebraic Function Fields
- Reductions for Non-Adaptive algorithms

## דרישות הקורס

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| **וידיו YouTube על מאמר או חלק ממאמר – בעזרת-PowerPoint** | **60%** |
| **בחינה סופית על המאמר** | **40%** |

**הוידיו יהיה בשפה האנגלית – בבודדים (כל סטודנט מאמר אחר)**