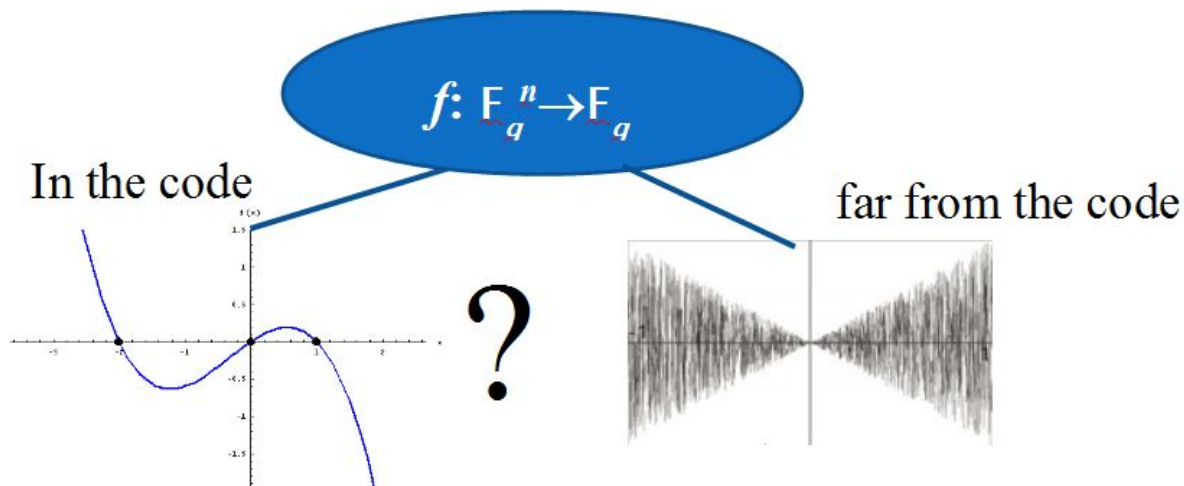

Algebraic property testing

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Algebraic property testing

Property testing: using $O(1)$ queries determined with high probability if f is in the code or far from the code

Algebraic codes: linear codes that are affine invariant



Algebraic property testing

Example: low degree polynomials [RS96,ALMSS98,AS03, FS95,AKKLR05, KR06, JPRZ09, BKSSZ10, HSS11,HGS15]

More examples: lifted codes (codes defined by their restriction on subspaces) [KS08,HRS13,HGS15]

Applications: PCP [ALMSS92], Small sets expanders [BGHMRS12], Xor lemmas for polys [VW08], Algorithms [ABGH14]

More interesting problems

- **Interactive coding:** transcript resilient to error
- **Natural communication:** uncertainty, evolve
- **Protocols and algorithms:** distributed and centralized

Thanks!

