

Nepomnjascij's Theorem
and
Independence Results
in
Bounded Arithmetic

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Outline

- ① Motivation
- ② Bounded Arithmetic
- ③ Dumb theories T such that
 $T \not\vdash NP = coNP$
- ④ Towards stronger theories
 - Ⓐ Lower bound on MRDP
 - Ⓑ Lower bound on $\Sigma_{1,1}^b = \Pi_{1,1}^b$
- ⑤ Conclusion



Motivation

- Want to exhibit any reasonable T such that $T \neq P = NP$ or $T \neq NP = coNP$
- Given we can show such a T find stronger and stronger T' such $T' \neq NP = coNP$
- Maybe get enough insight to actually show $NP \neq coNP$