

# Cube-based Isomorph-free Finite Model Finding

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# Motivation: Universal Algebra

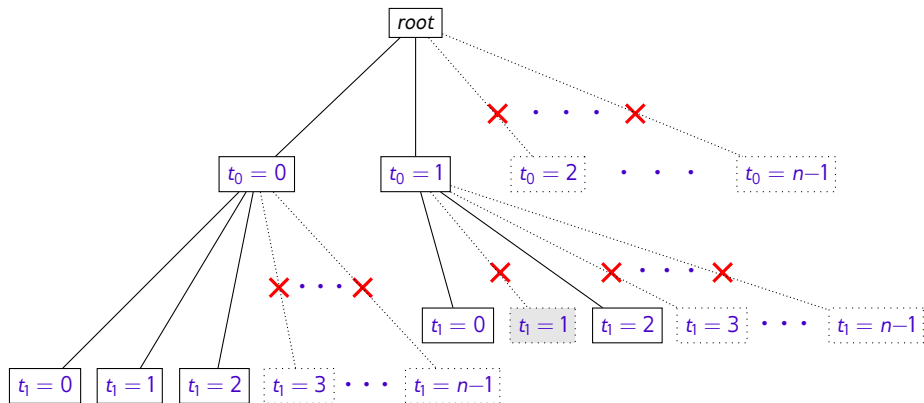
- In **universal algebra** mathematicians study **classes of mathematical structures**
- **Example:** Semigroups, groups, quasigroups

# Motivation: Universal Algebra

- In **universal algebra** mathematicians study **classes of mathematical structures**
- **Example:** Semigroups, groups, quasigroups
- **Goal:** Find (all) algebras for given axioms.
- **Example** binary operations

<b>OR</b>	<b>0</b>	<b>1</b>	<b>AND</b>	<b>0</b>	<b>1</b>	<b>XOR</b>	<b>0</b>	<b>1</b>
<b>0</b>	0	1	<b>0</b>	0	0	<b>0</b>	0	1
<b>1</b>	1	1	<b>1</b>	0	1	<b>1</b>	1	0

# Fast Exhaustive Search by Cubes



# Experimental Evaluation

## ■ New Results

- ▶ near-rings — OEIS A305858
- ▶ Tarski's HSI — OEIS A214396

## ■ Faster Enumeration

