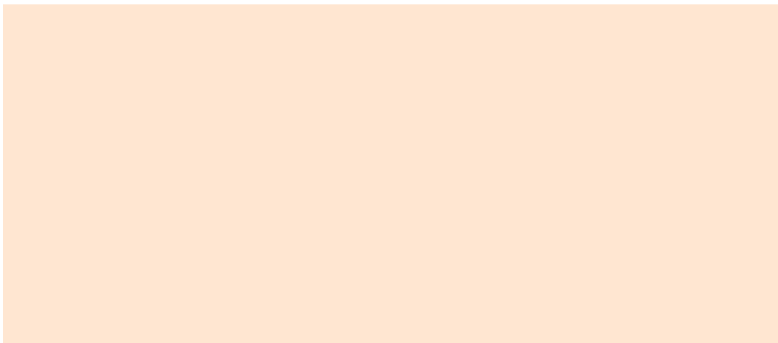


# Theorem Prover **Moca 0.2** (Oi and Hirokawa, JAIST)

**Infeasibility Problem:**  $\bigvee_i (s_i \sigma \not\stackrel{*}{\rightarrow}_{\mathcal{R}} t_i \sigma)$  for every  $\sigma$ ?



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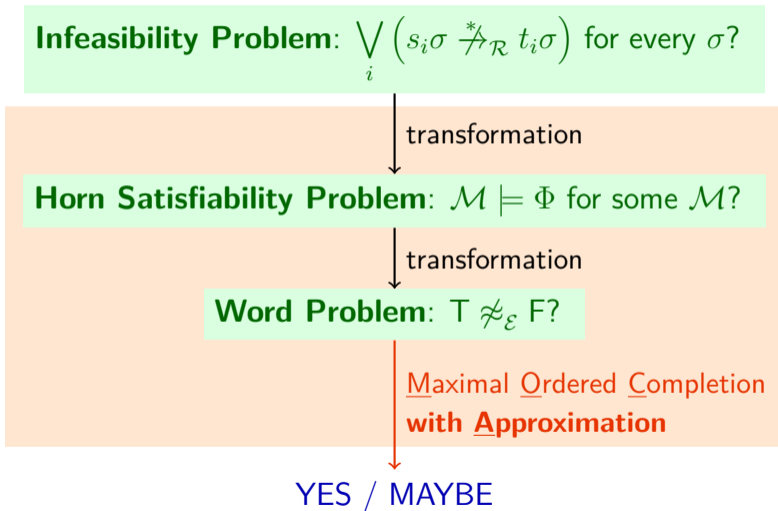
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**Word Problem:**  $T \not\stackrel{\varepsilon}{\sim} F$ ?

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# Transformations to Word Problem

## Infeasibility Problem

### ■ CTRS:

$$x - 0 \rightarrow x$$

$$0 - x \rightarrow 0$$

$$s(x) - s(y) \rightarrow x - y$$

### ■ Condition:

$$x - x \xrightarrow{*} \mathcal{R} s(x)$$

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$$\forall x. \quad x - 0 = x$$

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## Word Problem

### ■ ES:

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Infeasible



Satisfiable



$T \neq_{\varepsilon} F$



## Approximation for Showing $T \not\approx_{\mathcal{E}} F$

### Fact

if  $\approx_{\mathcal{E}} \subseteq \approx_{\mathcal{E}'}$  ( $\mathcal{E}$  is approximated as  $\mathcal{E}'$ ) then  $T \not\approx_{\mathcal{E}'} F$  implies  $T \not\approx_{\mathcal{E}} F$

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### Approximation $\mathcal{E}'$

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$$f(s(x), x) = F$$

admits **complete TRS!**

## New Features

Moca version 0.2 supports:

- **generalized split-if encoding** (Oi 2019)
- **inlining for conditional rewrite rules** (Sternagel & Sternagel 2017)