Problem chi

$$R_0, X \vdash_{\text{ipl}} \tilde{g}\,?$$

Proved

Clauses in R_0: 17

Clauses in X: 6

Atoms: 16

Calls to the SAT-solver: 15

Restarts: 6

R_0 and X are defined at the end of the document

Start

(0) $R_0 \vdash_{\text{c}} \tilde{g}\,?$

No($\emptyset$)

New world: w_0

W		λ s.t. $w \not\Vdash_W \lambda$
w_0	$\emptyset$	λ_0, λ_1, λ_2, λ_3, λ_4, λ_5

Selected: $\langle w_0,\ \lambda_0 = (p_3 \to p_2) \to \tilde{p}_7 \rangle$

(1) $R_0,\ w_0,\ p_3 \vdash_{\text{c}} p_2\,?$

No($\{\, \tilde{p}_{10},\ \tilde{p}_6,\ p_3 \,\}$)

New world: w_1

W		λ s.t. $w \not\Vdash_W \lambda$
w_1	$\tilde{p}_{10}$, $\tilde{p}_6$, p_3	λ_3, λ_5
w_0	$\emptyset$	λ_2, λ_3, λ_4, λ_5

Selected: $\langle w_1,\ \lambda_3 = (p_2 \to p_1) \to \tilde{p}_2 \rangle$

(2) $R_0,\ w_1,\ p_2 \vdash_{\text{c}} p_1\,?$

Yes($\{\, \tilde{p}_6,\ p_2 \,\}$)

$R_0,\ \tilde{p}_6,\ p_2 \vdash_{\text{c}} p_1$

New clause: $\varphi_0 = \tilde{p}_6 \to \tilde{p}_2$

$R_1 = R_0, \varphi_0$

Restart 1

(3) $R_1 \vdash_{\mathrm{c}} \tilde{g}$?

No($\{ \tilde{p}_1, \tilde{p}_{10}, \tilde{p}_7, p_2 \}$)

New world: w_2

W		λ s.t. $w \not\Vdash_W \lambda$
w_2	$\tilde{p}_1, \tilde{p}_{10}, \tilde{p}_7, p_2$	λ_1

Selected: $\langle w_2, \lambda_1 = (p_3 \to p_1) \to \tilde{p}_9 \rangle$

(4) $R_1, w_2, p_3 \vdash_{\mathrm{c}} p_1$?

Yes($\{ \tilde{p}_1, p_3 \}$)

$R_1, \tilde{p}_1, p_3 \vdash_{\mathrm{c}} p_1$

New clause: $\varphi_1 = \tilde{p}_1 \to \tilde{p}_9$

$R_2 = R_1, \varphi_1$

Restart 2

(5) $R_2 \vdash_{\mathrm{c}} \tilde{g}$?

No($\{ \tilde{p}_{10}, \tilde{p}_2, \tilde{p}_6, p_3 \}$)

New world: w_3

W		λ s.t. $w \not\Vdash_W \lambda$
w_3	$\tilde{p}_{10}, \tilde{p}_2, \tilde{p}_6, p_3$	λ_5

Selected: $\langle w_3, \lambda_5 = (p_1 \to p_2) \to \tilde{p}_1 \rangle$

(6) $R_2, w_3, p_1 \vdash_{\mathrm{c}} p_2$?

Yes($\{ \tilde{p}_{10}, p_1 \}$)

$R_2, \tilde{p}_{10}, p_1 \vdash_{\mathrm{c}} p_2$

New clause: $\varphi_2 = \tilde{p}_{10} \to \tilde{p}_1$

$R_3 = R_2, \varphi_2$

Restart 3

(7) $R_3 \vdash_{\mathrm{c}} \tilde{g}$?

No($\{ \tilde{p}_2, \tilde{p}_6, \tilde{p}_9, p_1 \}$)

New world: w_4

W		λ s.t. $w \not\Vdash_W \lambda$
w_4	$\tilde{p}_2, \tilde{p}_6, \tilde{p}_9, p_1$	λ_0

Selected: $\langle w_4, \lambda_0 = (p_3 \to p_2) \to \tilde{p}_7 \rangle$

(8) $R_3, w_4, p_3 \vdash_c p_2$?
Yes($\{ p_3 \}$)
$R_3, p_3 \vdash_c p_2$
New clause: $\varphi_3 = \tilde{p}_7$
$R_4 = R_3, \varphi_3$

Restart 4

(9) $R_4 \vdash_c \tilde{g}$?
No($\{ \tilde{p}_1, \tilde{p}_7, \tilde{p}_9 \}$)
New world: w_5

W		λ s.t. $w \not\Vdash_W \lambda$
w_5	$\tilde{p}_1, \tilde{p}_7, \tilde{p}_9$	$\lambda_2, \lambda_3, \lambda_4$

Selected: $\langle w_5, \lambda_2 = (p_2 \to p_3) \to \tilde{p}_6 \rangle$

(10) $R_4, w_5, p_2 \vdash_c p_3$?
No($\{ \tilde{p}_1, \tilde{p}_7, \tilde{p}_9, p_2 \}$)
New world: w_6

W		λ s.t. $w \not\Vdash_W \lambda$
w_6	$\tilde{p}_1, \tilde{p}_7, \tilde{p}_9, p_2$	λ_4
w_5	$\tilde{p}_1, \tilde{p}_7, \tilde{p}_9$	λ_4

Selected: $\langle w_6, \lambda_4 = (p_1 \to p_3) \to \tilde{p}_{10} \rangle$

(11) $R_4, w_6, p_1 \vdash_c p_3$?
Yes($\{ \tilde{p}_1, p_1 \}$)
$R_4, \tilde{p}_1, p_1 \vdash_c p_3$
New clause: $\varphi_4 = \tilde{p}_1 \to \tilde{p}_{10}$
$R_5 = R_4, \varphi_4$

Restart 5

(12) $R_5 \vdash_c \tilde{g}$?
No($\{ \tilde{p}_2, \tilde{p}_7, \tilde{p}_9, p_1 \}$)
New world: w_7

W		λ s.t. $w \not\Vdash_W \lambda$
w_7	$\tilde{p}_2, \tilde{p}_7, \tilde{p}_9, p_1$	λ_2

Selected: $\langle w_7, \lambda_2 = (p_2 \to p_3) \to \tilde{p}_6 \rangle$

(13) $R_5, w_7, p_2 \vdash_c p_3$?
Yes($\{ p_2 \}$)
$R_5, p_2 \vdash_c p_3$
New clause: $\varphi_5 = \tilde{p}_6$
$R_6 = R_5, \varphi_5$

Restart 6

(14) $R_6 \vdash_c \tilde{g}$?
Yes($\emptyset$)
$R_6 \vdash_c \tilde{g}$

Goal proved

Problem description

Flat clauses R_0 (17):

1. $\tilde{p}_1 \wedge \tilde{p}_2 \to \tilde{p}_0$
2. $\tilde{p}_3 \to p_2$
3. $\tilde{p}_3 \to p_3$
4. $\tilde{p}_4 \to p_1$
5. $\tilde{p}_4 \to \tilde{p}_3$
6. $\tilde{p}_0 \to \tilde{p}_4$
7. $\tilde{p}_6 \wedge \tilde{p}_7 \to \tilde{p}_5$
8. $\tilde{p}_5 \to \tilde{p}_4$
9. $\tilde{p}_9 \wedge \tilde{p}_{10} \to \tilde{p}_8$

10. $\tilde{p}_8 \to \tilde{p}_4$
11. $p_1 \wedge p_2 \wedge p_3 \to \tilde{g}$
12. $p_2 \to \tilde{p}_7$
13. $p_1 \to \tilde{p}_9$
14. $p_3 \to \tilde{p}_6$
15. $p_1 \to \tilde{p}_2$
16. $p_3 \to \tilde{p}_{10}$
17. $p_2 \to \tilde{p}_1$

Implication clauses X (6):

$\lambda_0 = (p_3 \to p_2) \to \tilde{p}_7$

$\lambda_1 = (p_3 \to p_1) \to \tilde{p}_9$

$\lambda_2 = (p_2 \to p_3) \to \tilde{p}_6$

$\lambda_3 = (p_2 \to p_1) \to \tilde{p}_2$

$\lambda_4 = (p_1 \to p_3) \to \tilde{p}_{10}$

$\lambda_5 = (p_1 \to p_2) \to \tilde{p}_1$

Added clauses (6):

$\varphi_0 = \tilde{p}_6 \to \tilde{p}_2$

$\varphi_1 = \tilde{p}_1 \to \tilde{p}_9$

$\varphi_2 = \tilde{p}_{10} \to \tilde{p}_1$

$\varphi_3 = \tilde{p}_7$

$\varphi_4 = \tilde{p}_1 \to \tilde{p}_{10}$

$\varphi_5 = \tilde{p}_6$