

t11\_ff\_siec

(TMSkuG2NxBG2u9popEfBijRPsWi3hSEmmuf)

October 27, 2020

Let  $v1\_net\_1 : \iota \Rightarrow o$  be given. Let  $l1\_petri : \iota \Rightarrow o$  be given. Let  $k3\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_net\_1 : \iota \Rightarrow \iota$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k2\_relat\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $r1\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k10\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_relat\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(v1\_relat\_1 X1) \Rightarrow ((r1\_xboole\_0 \\ & (k10\_xtuple\_0 X0) (k9\_xtuple\_0 X1)) \Rightarrow (k3\_relat\_1 X0 X1 = k1\_xboole\_0))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_net\_1 X0) \wedge (l1\_petri X0)) \Rightarrow ((r1\_xboole\_0 (k10\_xtuple\_0 \\
& (k5\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 X0))) (k9\_xtuple\_0 (k5\_relat\_1 \\
& (k1\_net\_1 X0) (u4\_struct\_0 X0)))) \wedge ((r1\_xboole\_0 (k10\_xtuple\_0 \\
& (k5\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 X0))) (k9\_xtuple\_0 (k5\_relat\_1 \\
& (k2\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 X0)))) \wedge ((r1\_xboole\_0 \\
& (k10\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 X0))) (k9\_xtuple\_0 \\
& (k4\_relat\_1 (u4\_struct\_0 X0)))) \wedge ((r1\_xboole\_0 (k10\_xtuple\_0 \\
& (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 X0))) (k9\_xtuple\_0 \\
& (k5\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 X0)))) \wedge ((r1\_xboole\_0 \\
& (k10\_xtuple\_0 (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 \\
& X0))) (k9\_xtuple\_0 (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 \\
& X0)))) \wedge ((r1\_xboole\_0 (k10\_xtuple\_0 (k5\_relat\_1 (k2\_relat\_1 \\
& (k1\_net\_1 X0) (u4\_struct\_0 X0))) (k9\_xtuple\_0 (k4\_relat\_1 (u4\_struct\_0 \\
& X0)))) \wedge ((r1\_xboole\_0 (k9\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) \\
& (u4\_struct\_0 X0))) (k10\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 \\
& X0)))) \wedge ((r1\_xboole\_0 (k9\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) \\
& (u4\_struct\_0 X0))) (k10\_xtuple\_0 (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 \\
& X0) (u4\_struct\_0 X0)))) \wedge ((r1\_xboole\_0 (k9\_xtuple\_0 (k5\_relat\_1 ( \\
& k1\_net\_1 X0) (u4\_struct\_0 X0))) (k10\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 \\
& X0) (u4\_struct\_0 X0)))) \wedge ((r1\_xboole\_0 (k9\_xtuple\_0 (k5\_relat\_1 \\
& (k2\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 X0))) (k10\_xtuple\_0 ( \\
& k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 X0) (u4\_struct\_0 X0)))) \wedge (( \\
& r1\_xboole\_0 (k9\_xtuple\_0 (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 X0) \\
& (u4\_struct\_0 X0))) (k10\_xtuple\_0 (k4\_relat\_1 (u1\_struct\_0 X0)))) \wedge \\
& ((r1\_xboole\_0 (k10\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 \\
& X0))) (k9\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 X0)))) \wedge \\
& ((r1\_xboole\_0 (k10\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 \\
& X0))) (k9\_xtuple\_0 (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 \\
& X0)))) \wedge ((r1\_xboole\_0 (k10\_xtuple\_0 (k5\_relat\_1 \\
& (k2\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 X0))) (k9\_xtuple\_0 (k5\_relat\_1 \\
& (k2\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 X0)))) \wedge ((r1\_xboole\_0 \\
& (k10\_xtuple\_0 (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 \\
& X0))) (k9\_xtuple\_0 (k4\_relat\_1 (u1\_struct\_0 X0)))) \wedge ((r1\_xboole\_0 \\
& (k9\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 X0))) (k10\_xtuple\_0 \\
& (k5\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 X0)))) \wedge ((r1\_xboole\_0 \\
& (k9\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 X0))) (k10\_xtuple\_0 \\
& (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 X0)))) \wedge ( \\
& (r1\_xboole\_0 (k9\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 \\
& X0))) (k10\_xtuple\_0 (k4\_relat\_1 (u4\_struct\_0 X0)))) \wedge ((r1\_xboole\_0 \\
& (k9\_xtuple\_0 (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 \\
& X0))) (k10\_xtuple\_0 (k5\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 X0)))) \wedge \\
& ((r1\_xboole\_0 (k9\_xtuple\_0 (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 \\
& X0) (u1\_struct\_0 X0))) (k10\_xtuple\_0 (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 \\
& X0) (u1\_struct\_0 X0)))) \wedge (r1\_xboole\_0 (k9\_xtuple\_0 \\
& (k5\_relat\_1 (k2\_relat\_1 (k1\_net\_1 X0) (u1\_struct\_0 X0))) (k10\_xtuple\_0 \\
& (k4\_relat\_1 (u4\_struct\_0 X0))))))))))))))))))))))))))
\end{aligned}$$

(2)

Assume the following.

$$\forall X0.(l1\_petri\ X0)\Rightarrow(v1\_relat\_1\ (k1\_net\_1\ X0)) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.(v1\_relat\_1\ X0)\Rightarrow(v1\_relat\_1\ (k5\_relat\_1\ X0\ X1)) \quad (4)$$

Assume the following.

$$\forall X0.(v1\_relat\_1\ X0)\Rightarrow(v1\_relat\_1\ (k2\_relat\_1\ X0)) \quad (5)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((v1\_net\_1\ X0)\wedge(l1\_petri\ X0))\Rightarrow((k3\_relat\_1\ (k5\_relat\_1 \\ & (k1\_net\_1\ X0)\ (u4\_struct\_0\ X0))\ (k5\_relat\_1\ (k1\_net\_1\ X0)\ (u4\_struct\_0 \\ & X0)) = k1\_xboole\_0)\wedge((k3\_relat\_1\ (k5\_relat\_1\ (k2\_relat\_1\ (k1\_net\_1 \\ & X0))\ (u4\_struct\_0\ X0))\ (k5\_relat\_1\ (k2\_relat\_1\ (k1\_net\_1\ X0)) \\ & (u4\_struct\_0\ X0)) = k1\_xboole\_0)\wedge((k3\_relat\_1\ (k5\_relat\_1\ (k1\_net\_1 \\ & X0)\ (u4\_struct\_0\ X0))\ (k5\_relat\_1\ (k2\_relat\_1\ (k1\_net\_1\ X0))\ ( \\ & u4\_struct\_0\ X0)) = k1\_xboole\_0)\wedge((k3\_relat\_1\ (k5\_relat\_1\ (k2\_relat\_1 \\ & (k1\_net\_1\ X0))\ (u4\_struct\_0\ X0))\ (k5\_relat\_1\ (k1\_net\_1\ X0)\ (u4\_struct\_0 \\ & X0)) = k1\_xboole\_0)\wedge((k3\_relat\_1\ (k5\_relat\_1\ (k1\_net\_1\ X0)\ (u1\_struct\_0 \\ & X0))\ (k5\_relat\_1\ (k1\_net\_1\ X0)\ (u1\_struct\_0\ X0)) = k1\_xboole\_0)\wedge \\ & ((k3\_relat\_1\ (k5\_relat\_1\ (k2\_relat\_1\ (k1\_net\_1\ X0))\ (u1\_struct\_0 \\ & X0))\ (k5\_relat\_1\ (k2\_relat\_1\ (k1\_net\_1\ X0))\ (u1\_struct\_0\ X0)) = \\ & k1\_xboole\_0)\wedge((k3\_relat\_1\ (k5\_relat\_1\ (k1\_net\_1\ X0)\ (u1\_struct\_0 \\ & X0))\ (k5\_relat\_1\ (k2\_relat\_1\ (k1\_net\_1\ X0))\ (u1\_struct\_0\ X0)) = \\ & k1\_xboole\_0)\wedge(k3\_relat\_1\ (k5\_relat\_1\ (k2\_relat\_1\ (k1\_net\_1 \\ & X0))\ (u1\_struct\_0\ X0))\ (k5\_relat\_1\ (k1\_net\_1\ X0)\ (u1\_struct\_0 \\ & X0)) = k1\_xboole\_0)))))) \end{aligned}$$