

t55\_filter\_2 (TM-  
FLY2QRc1oTvNN3dieSLUzD2p3JdoN7wim)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v10\_lattices : \iota \Rightarrow o$  be given. Let  $v17\_lattices : \iota \Rightarrow o$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v18\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v21\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $r1\_filter\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_filter\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_filter\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v11\_lattices : \iota \Rightarrow o$  be given. Let  $v15\_lattices : \iota \Rightarrow o$  be given. Let  $v16\_lattices : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow (\forall X1.((\neg v1\_xboole\_0 X1) \wedge ((v18\_lattices X1 X0) \wedge \\ & ((v21\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v18\_lattices X2 X0) \wedge \\ & ((v21\_lattices X2 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \Rightarrow (r1\_filter\_2 (u1\_struct\_0 X0) (k7\_filter\_2 X0 (k4\_subset\_1 \\ & (u1\_struct\_0 X0) X1 X2)) (k7\_filter\_2 X0 (k8\_filter\_2 X0 X1 X2)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (k1\_zfmisc\_1 X0)) \Rightarrow ((\forall X3. (m1\_subset\_1 \\ & X3 X0) \Rightarrow ((X3 \in X1) \Rightarrow (X3 \in X2))) \Rightarrow (r1\_tarski X1 X2))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices \\ & X0) \wedge ((v11\_lattices X0) \wedge (l3\_lattices X0)))) \wedge (((\neg v1\_xboole\_0 \\ & X1) \wedge ((v18\_lattices X1 X0) \wedge ((v21\_lattices X1 X0) \wedge (m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))) \wedge ((\neg v1\_xboole\_0 X2) \wedge (( \\ & v18\_lattices X2 X0) \wedge ((v21\_lattices X2 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))))))))) \Rightarrow ((v18\_lattices (k8\_filter\_2 X0 X1 X2) \\ & X0) \wedge (v21\_lattices (k8\_filter\_2 X0 X1 X2) X0)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((v10\_lattices \\ & X0)\wedge(l3\_lattices X0)))\wedge(((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 X1 \\ & (k1\_zfmisc\_1 (u1\_struct\_0 X0))))\wedge((\neg v1\_xboole\_0 X2)\wedge(m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0))))))\Rightarrow(\neg v1\_xboole\_0 (k8\_filter\_2 \\ & X0 X1 X2)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((v10\_lattices \\ & X0)\wedge(l3\_lattices X0)))\wedge(((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 X1 \\ & (k1\_zfmisc\_1 (u1\_struct\_0 X0))))\wedge((\neg v1\_xboole\_0 X2)\wedge(m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0))))))\Rightarrow(m1\_subset\_1 (k8\_filter\_2 \\ & X0 X1 X2) (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge(l3\_lattices \\ & X0)))\Rightarrow(\forall X1.((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))))\Rightarrow(\forall X2.((\neg v1\_xboole\_0 X2)\wedge((v18\_lattices \\ & X2 X0)\wedge((v21\_lattices X2 X0)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0))))))\Rightarrow((X2 = k7\_filter\_2 X0 X1)\Leftrightarrow((r1\_tarski X1 X2)\wedge(\forall X3. \\ & ((\neg v1\_xboole\_0 X3)\wedge((v18\_lattices X3 X0)\wedge((v21\_lattices X3 X0)\wedge \\ & (m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 X0))))))\Rightarrow((r1\_tarski \\ & X1 X3)\Rightarrow(r1\_tarski X2 X3)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l3\_lattices X0)\Rightarrow(((\neg v2\_struct\_0 X0)\wedge(v17\_lattices \\ & X0))\Rightarrow((\neg v2\_struct\_0 X0)\wedge((v11\_lattices X0)\wedge((v15\_lattices \\ & X0)\wedge(v16\_lattices X0)))) \end{aligned} \quad (7)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge((v17\_lattices \\ & X0)\wedge(l3\_lattices X0))))\Rightarrow(\forall X1.((\neg v1\_xboole\_0 X1)\wedge((v18\_lattices \\ & X1 X0)\wedge((v21\_lattices X1 X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0))))))\Rightarrow(\forall X2.((\neg v1\_xboole\_0 X2)\wedge((v18\_lattices X2 X0)\wedge \\ & ((v21\_lattices X2 X0)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0))))))\Rightarrow(r1\_filter\_2 (u1\_struct\_0 X0) (k7\_filter\_2 X0 (k4\_subset\_1 \\ & (u1\_struct\_0 X0) X1 X2)) (k8\_filter\_2 X0 X1 X2))) \end{aligned}$$