

## t75\_filter\_2

(TMZJrEjcZdgFP8Fo5bmrRtNXBvoLckj9ni1)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v10\_lattices : \iota \Rightarrow o$  be given. Let  $l3\_lattices : \iota \Rightarrow \iota \Rightarrow o$  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  $v13\_lattices : \iota \Rightarrow o$  be given. Let  $k10\_filter\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v20\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k11\_filter\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_lattice2 : \iota \Rightarrow \iota$  be given. Let  $k3\_filter\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v19\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_filter\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v14\_lattices : \iota \Rightarrow o$  be given. Let  $m2\_nat\_lat : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_lattices : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow (\forall X1. ((\neg v1\_xboole\_0 X1) \wedge ((v20\_lattices X1 X0) \wedge \\ & ((v21\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \Rightarrow (k10\_filter\_2 X0 X1 = k11\_filter\_2 (k1\_lattice2 X0) ( \\ & k10\_filter\_2 (k1\_lattice2 X0) (k3\_filter\_2 X0 X1)))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow (\forall X1. ((\neg v1\_xboole\_0 X1) \wedge ((v19\_lattices X1 X0) \wedge \\ & ((v20\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \Rightarrow (k6\_filter\_0 X0 X1 = k10\_filter\_2 X0 X1)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow (\forall X1. ((\neg v1\_xboole\_0 X1) \wedge ((v19\_lattices X1 X0) \wedge \\ & ((v20\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \Rightarrow ((v14\_lattices X0) \Rightarrow (v14\_lattices (k6\_filter\_0 X0 X1)))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow ((v14\_lattices X0) \Leftrightarrow (v13\_lattices (k1\_lattice2 X0))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \Rightarrow ((v13\_lattices X0) \Leftrightarrow (v14\_lattices (k1\_lattice2 X0))) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \Rightarrow (\forall X1.((\neg v1\_xboole\_0 X1) \wedge ((v18\_lattices X1 X0) \wedge \\ & ((v21\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))) \Leftrightarrow ((\neg v1\_xboole\_0 X1) \wedge ((v19\_lattices X1 (k1\_lattice2 X0)) \wedge ((v20\_lattices X1 (k1\_lattice2 X0)) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 (k1\_lattice2 X0)))))))))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \wedge (m2\_nat\_lat X1 X0)) \Rightarrow (k11\_filter\_2 X0 X1 = k1\_lattice2 X1) \quad (7)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \Rightarrow ((v3\_lattices (k1\_lattice2 X0)) \wedge (v10\_lattices (k1\_lattice2 X0))) \quad (8)$$

Assume the following.

$$\forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \wedge ((v20\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))) \Rightarrow (v21\_lattices (k3\_filter\_2 X0 X1) (k1\_lattice2 X0)) \quad (9)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge (l3\_lattices X0)) \Rightarrow ((\neg v2\_struct\_0 (k1\_lattice2 X0)) \wedge (v3\_lattices (k1\_lattice2 X0))) \quad (10)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \Rightarrow (\forall X1.(m2\_nat\_lat X1 X0) \Rightarrow ((\neg v2\_struct\_0 X1) \wedge ((v10\_lattices X1) \wedge (l3\_lattices X1)))) \quad (11)$$

Assume the following.

$$\forall X0.(l3\_lattices X0) \Rightarrow ((v3\_lattices (k1\_lattice2 X0)) \wedge (l3\_lattices (k1\_lattice2 X0))) \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge \\ & (l3\_lattices X0))) \wedge ((\neg v1\_xboole\_0 X1) \wedge ((v20\_lattices X1 X0) \wedge \\ & ((v21\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \Rightarrow (m2\_nat\_lat (k10\_filter\_2 X0 X1) X0) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0))) \Rightarrow (k3\_filter\_2 X0 X1 = X1)) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0))) \Rightarrow ((v18\_lattices X1 X0) \Rightarrow (v20\_lattices X1 X0))) \end{aligned} \quad (15)$$

**Theorem 1**

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow (\forall X1. ((\neg v1\_xboole\_0 X1) \wedge ((v18\_lattices X1 X0) \wedge \\ & ((v21\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \Rightarrow ((v13\_lattices X0) \Rightarrow (v13\_lattices (k10\_filter\_2 X0 \\ & X1)))) \end{aligned}$$