

## t66\_lattice2

(TMKFMwo8jp4Jn4JrmMgP9FqtRQtA9DpAH5W)

October 27, 2020

Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_finsub\_1 : \iota \Rightarrow \iota$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v10\_lattices : \iota \Rightarrow o$  be given. Let  $v11\_lattices : \iota \Rightarrow o$  be given. Let  $v13\_lattices : \iota \Rightarrow o$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_lattice2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_funcop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_lattices : \iota \Rightarrow \iota$  be given. Let  $k5\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v6\_lattices : \iota \Rightarrow o$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $k2\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l2\_lattices : \iota \Rightarrow o$  be given. Let  $v4\_lattices : \iota \Rightarrow o$  be given. Let  $v5\_lattices : \iota \Rightarrow o$  be given. Let  $v7\_lattices : \iota \Rightarrow o$  be given. Let  $v8\_lattices : \iota \Rightarrow o$  be given. Let  $v9\_lattices : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k5\_finsub\_1 \\
 & X0)) \Rightarrow (\forall X2. ((\neg v2\_struct\_0 X2) \wedge (v10\_lattices X2) \wedge ((v11\_lattices \\
 & X2) \wedge ((v13\_lattices X2) \wedge (l3\_lattices X2)))))) \Rightarrow (\forall X3. (( \\
 & v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 (u1\_struct\_0 X2)) \wedge (m1\_subset\_1 \\
 & X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 (u1\_struct\_0 X2)))))) \Rightarrow (\forall X4. \\
 & (m1\_subset\_1 X4 (u1\_struct\_0 X2)) \Rightarrow (k5\_binop\_1 (u1\_struct\_0 X2) \\
 & (u1\_lattices X2) X4 (k2\_lattice2 X0 X2 X1 X3) = k2\_lattice2 X0 X2 X1 \\
 & (k10\_funcop\_1 (u1\_struct\_0 X2) X0 (u1\_lattices X2) X4 X3))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge (v6\_lattices \\
 & X0) \wedge (l1\_lattices X0)) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge ( \\
 & m1\_subset\_1 X2 (u1\_struct\_0 X0)))) \Rightarrow (k4\_lattices X0 X1 X2 = k2\_lattices \\
 & X0 X1 X2)
 \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0. (l3\_lattices X0) \Rightarrow ((l1\_lattices X0) \wedge (l2\_lattices X0)) \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 X0)\wedge \\ & ((\neg v2\_struct\_0 X1)\wedge((v10\_lattices X1)\wedge(l3\_lattices X1)))\wedge \\ & ((m1\_subset\_1 X2 (k5\_finsub\_1 X0))\wedge((v1\_funct\_1 X3)\wedge((v1\_funct\_2 \\ & X3 X0 (u1\_struct\_0 X1))\wedge(m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 (u1\_struct\_0 X1))))))))\Rightarrow(m1\_subset\_1 (k2\_lattice2 X0 X1 X2 \\ & X3) (u1\_struct\_0 X1)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge(l1\_lattices X0))\Rightarrow(\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 X0))\Rightarrow(\forall X2.(m1\_subset\_1 X2 \\ & (u1\_struct\_0 X0))\Rightarrow(k2\_lattices X0 X1 X2 = k5\_binop\_1 (u1\_struct\_0 \\ & X0) (u1\_lattices X0) X1 X2))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l3\_lattices X0)\Rightarrow(((\neg v2\_struct\_0 X0)\wedge(v10\_lattices \\ & X0))\Rightarrow((\neg v2\_struct\_0 X0)\wedge((v4\_lattices X0)\wedge((v5\_lattices X0)\wedge \\ & ((v6\_lattices X0)\wedge((v7\_lattices X0)\wedge((v8\_lattices X0)\wedge(v9\_lattices \\ & X0)))))))) \end{aligned} \quad (6)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (k5\_finsub\_1 \\ & X0))\Rightarrow(\forall X2.((\neg v2\_struct\_0 X2)\wedge((v10\_lattices X2)\wedge((v11\_lattices \\ & X2)\wedge((v13\_lattices X2)\wedge(l3\_lattices X2))))))\Rightarrow(\forall X3.(( \\ & v1\_funct\_1 X3)\wedge((v1\_funct\_2 X3 X0 (u1\_struct\_0 X2))\wedge(m1\_subset\_1 \\ & X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 (u1\_struct\_0 X2))))))\Rightarrow(\forall X4. \\ & (m1\_subset\_1 X4 (u1\_struct\_0 X2))\Rightarrow(k4\_lattices X2 X4 (k2\_lattice2 \\ & X0 X2 X1 X3) = k2\_lattice2 X0 X2 X1 (k10\_funcop\_1 (u1\_struct\_0 X2) \\ & X0 (u1\_lattices X2) X4 X3)))))) \end{aligned}$$