

t40_lattice2

(TMKv5wZeeNMFk4YV57ivSvENQ22oQunRtpj)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v10_lattices : \iota \Rightarrow o$ be given. Let $l3_lattices : \iota \Rightarrow o$ be given. 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 $v1_funct_1 : \iota \Rightarrow o$ 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 $r3_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_lattice2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_lattice2 : \iota \Rightarrow \iota$ be given. Let $k2_lattice2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $g3_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v3_lattices : \iota \Rightarrow o$ be given. Let $u1_lattices : \iota \Rightarrow \iota$ be given. Let $v3_binop_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u2_lattices : \iota \Rightarrow \iota$ be given. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $k7_setwiseo : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge (l3_lattices \\
 & X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
 & (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
 & (u1_struct_0 (k1_lattice2 X0))) \Rightarrow (\forall X4.(m1_subset_1 X4 \\
 & (u1_struct_0 (k1_lattice2 X0)))) \Rightarrow (((r3_lattices (k1_lattice2 \\
 & X0) X3 X4) \wedge ((X1 = X3) \wedge (X2 = X4))) \Rightarrow (r3_lattices X0 X2 X1))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge (l3_lattices \\
 & X0))) \Rightarrow (\forall X1.(\neg v1_xboole_0 X1) \Rightarrow (\forall X2.(m1_subset_1 \\
 & X2 X1) \Rightarrow (\forall X3.(m1_subset_1 X3 (k5_finsub_1 X1)) \Rightarrow (\forall X4. \\
 & ((v1_funct_1 X4) \wedge ((v1_funct_2 X4 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 \\
 & X4 (k1_zfmisc_1 (k2_zfmisc_1 X1 (u1_struct_0 X0)))))) \Rightarrow ((X2 \in X3) \Rightarrow \\
 & (r3_lattices X0 (k3_funct_2 X1 (u1_struct_0 X0) X4 X2) (k2_lattice2 \\
 & X1 X0 X3 X4))))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1_xboole_0 X0)\wedge \\ & (((v1_funct_1 X2)\wedge((v1_funct_2 X2 X0 X1)\wedge(m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1))))))\wedge(m1_subset_1 X3 X0)))\Rightarrow(k3_funct_2 X0 \\ & X1 X2 X3 = k1_funct_1 X2 X3) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1_funct_1 X1)\wedge((v1_funct_2 \\ & X1 (k2_zfmisc_1 X0 X0) X0)\wedge(m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0) X0))))))\wedge((v1_funct_1 X2)\wedge((v1_funct_2 X2 \\ & (k2_zfmisc_1 X0 X0) X0)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0) X0))))))\Rightarrow(\forall X3.\forall X4.\forall X5. \\ & (g3_lattices X0 X1 X2 = g3_lattices X3 X4 X5)\Rightarrow((X0 = X3)\wedge((X1 = X4)\wedge \\ & (X2 = X5)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge((v10_lattices X0)\wedge(l3_lattices \\ & X0)))\Rightarrow((v3_lattices (k1_lattice2 X0))\wedge(v10_lattices (k1_lattice2 \\ & X0))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge((v10_lattices X0)\wedge(l3_lattices \\ & X0)))\Rightarrow((v1_funct_1 (u1_lattices X0))\wedge((v1_funct_2 (u1_lattices \\ & X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 \\ & X0))\wedge(v3_binop_1 (u1_lattices X0) (u1_struct_0 X0)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge((v10_lattices X0)\wedge(l3_lattices \\ & X0)))\Rightarrow((v1_funct_1 (u2_lattices X0))\wedge((v1_funct_2 (u2_lattices \\ & X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 \\ & X0))\wedge(v3_binop_1 (u2_lattices X0) (u1_struct_0 X0)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge(l3_lattices X0))\Rightarrow((\neg v2_struct_0 \\ & (k1_lattice2 X0))\wedge(v3_lattices (k1_lattice2 X0))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l2_lattices X0)\Rightarrow((v1_funct_1 (u2_lattices X0))\wedge \\ & ((v1_funct_2 (u2_lattices X0) (k2_zfmisc_1 (u1_struct_0 X0) (\\ & u1_struct_0 X0)) (u1_struct_0 X0))\wedge(m1_subset_1 (u2_lattices \\ & X0) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (\\ & u1_struct_0 X0)) (u1_struct_0 X0)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_lattices\ X0) \Rightarrow ((v1_funct_1\ (u1_lattices\ X0)) \wedge \\ & ((v1_funct_2\ (u1_lattices\ X0)\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (\\ & u1_struct_0\ X0))\ (u1_struct_0\ X0)) \wedge (m1_subset_1\ (u1_lattices \\ & X0)\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (\\ & u1_struct_0\ X0))\ (u1_struct_0\ X0)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.(l3_lattices\ X0) \Rightarrow ((l1_lattices\ X0) \wedge (l2_lattices\ X0)) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1_xboole_0\ X0) \wedge \\ & (((\neg v2_struct_0\ X1) \wedge ((v10_lattices\ X1) \wedge (l3_lattices\ X1))) \wedge \\ & ((m1_subset_1\ X2\ (k5_finsub_1\ X0)) \wedge ((v1_funct_1\ X3) \wedge ((v1_funct_2 \\ & X3\ X0\ (u1_struct_0\ X1)) \wedge (m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_zfmisc_1 \\ & X0\ (u1_struct_0\ X1)))))) \Rightarrow (m1_subset_1\ (k3_lattice2\ X0\ X1\ X2 \\ & X3)\ (u1_struct_0\ X1)) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1_xboole_0\ X0) \wedge \\ & (((v1_funct_1\ X2) \wedge ((v1_funct_2\ X2\ X0\ X1) \wedge (m1_subset_1\ X2\ (k1_zfmisc_1 \\ & (k2_zfmisc_1\ X0\ X1)))) \wedge (m1_subset_1\ X3\ X0))) \Rightarrow (m1_subset_1\ (\\ & k3_funct_2\ X0\ X1\ X2\ X3)\ X1) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1_funct_1\ X1) \wedge ((v1_funct_2 \\ & X1\ (k2_zfmisc_1\ X0\ X0)\ X0) \wedge (m1_subset_1\ X1\ (k1_zfmisc_1\ (k2_zfmisc_1 \\ & (k2_zfmisc_1\ X0\ X0)\ X0)))) \wedge ((v1_funct_1\ X2) \wedge ((v1_funct_2\ X2 \\ & (k2_zfmisc_1\ X0\ X0)\ X0) \wedge (m1_subset_1\ X2\ (k1_zfmisc_1\ (k2_zfmisc_1 \\ & (k2_zfmisc_1\ X0\ X0)\ X0)))))) \Rightarrow ((v3_lattices\ (g3_lattices\ X0\ X1 \\ & X2)) \wedge (l3_lattices\ (g3_lattices\ X0\ X1\ X2))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0\ X0) \Rightarrow (\forall X1.((\neg v2_struct_0\ X1) \wedge \\ & ((v10_lattices\ X1) \wedge (l3_lattices\ X1))) \Rightarrow (\forall X2.(m1_subset_1 \\ & X2\ (k5_finsub_1\ X0)) \Rightarrow (\forall X3.((v1_funct_1\ X3) \wedge ((v1_funct_2 \\ & X3\ X0\ (u1_struct_0\ X1)) \wedge (m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_zfmisc_1 \\ & X0\ (u1_struct_0\ X1)))))) \Rightarrow (k3_lattice2\ X0\ X1\ X2\ X3 = k7_setwiseo \\ & X0\ (u1_struct_0\ X1)\ (u1_lattices\ X1)\ X2\ X3))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge \\
& ((v10_lattices X1) \wedge (l3_lattices X1))) \Rightarrow (\forall X2.(m1_subset_1 \\
& X2 (k5_finsub_1 X0)) \Rightarrow (\forall X3.((v1_funct_1 X3) \wedge ((v1_funct_2 \\
& X3 X0 (u1_struct_0 X1)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\
& X0 (u1_struct_0 X1)))))) \Rightarrow (k2_lattice2 X0 X1 X2 X3 = k7_setwiseo \\
& X0 (u1_struct_0 X1) (u2_lattices X1) X2 X3)))
\end{aligned} \tag{16}$$

Assume the following.

$$\forall X0.(l3_lattices X0) \Rightarrow (k1_lattice2 X0 = g3_lattices (u1_struct_0 X0) (u1_lattices X0) (u2_lattices X0)) \tag{17}$$

Assume the following.

$$\forall X0.(l3_lattices X0) \Rightarrow ((v3_lattices X0) \Rightarrow (X0 = g3_lattices (u1_struct_0 X0) (u2_lattices X0) (u1_lattices X0))) \tag{18}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge (l3_lattices \\
& X0))) \Rightarrow (\forall X1.(\neg v1_xboole_0 X1) \Rightarrow (\forall X2.(m1_subset_1 \\
& X2 X1) \Rightarrow (\forall X3.(m1_subset_1 X3 (k5_finsub_1 X1)) \Rightarrow (\forall X4. \\
& ((v1_funct_1 X4) \wedge ((v1_funct_2 X4 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 \\
& X4 (k1_zfmisc_1 (k2_zfmisc_1 X1 (u1_struct_0 X0)))))) \Rightarrow ((X2 \in X3) \Rightarrow \\
& (r3_lattices X0 (k3_lattice2 X1 X0 X3 X4) (k3_funct_2 X1 (u1_struct_0 \\
& X0) X4 X2))))))
\end{aligned}$$