

t53_lattice2

(TMLr3yHwSCsDriq2yeQxHxzH3i1LRxo3XMK)

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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 $v13_lattices : \iota \Rightarrow o$ 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 $k2_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_lattice2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $v1_binop_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_binop_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_setwiseo : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k7_setwiseo : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_setwiseo : \iota \Rightarrow \iota$ be given. Let $k4_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u2_lattices : \iota \Rightarrow \iota$ be given. Let $v5_lattices : \iota \Rightarrow o$ be given. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $v4_lattices : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $v6_lattices : \iota \Rightarrow o$ 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.

$$\forall X0. \forall X1. \neg(v1_xboole_0 X0) \wedge ((X0 \neq X1) \wedge (v1_xboole_0 X1)) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge (l3_lattices \\ & \quad X0))) \Rightarrow (\forall X1. (\neg v1_xboole_0 X1) \Rightarrow (\forall X2. (m1_subset_1 \\ & \quad X2 (k5_finsub_1 X1)) \Rightarrow (\forall X3. ((v1_funct_1 X3) \wedge ((v1_funct_2 \\ & \quad X3 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\ & \quad X1 (u1_struct_0 X0)))))) \Rightarrow (\forall X4. ((v1_funct_1 X4) \wedge ((v1_funct_2 \\ & \quad X4 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 \\ & \quad X1 (u1_struct_0 X0)))))) \Rightarrow ((k2_partfun1 X1 (u1_struct_0 X0) X3 \\ & \quad X2 = k2_partfun1 X1 (u1_struct_0 X0) X4 X2) \Rightarrow ((X2 = k1_xboole_0) \vee \\ & \quad (k2_lattice2 X1 X0 X2 X3 = k2_lattice2 X1 X0 X2 X4)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.(\neg v1_xboole_0 X1) \Rightarrow \\ & (\forall X2.((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 X0 \\ & X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\ & X0 X0) X0) X0)))) \Rightarrow (((v1_binop_1 X2 X0) \wedge ((v2_binop_1 X2 X0) \wedge (v1_setwiseo \\ & X2 X0))) \Rightarrow (\forall X3.((v1_funct_1 X3) \wedge ((v1_funct_2 X3 X1 X0) \wedge \\ & (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0)))) \Rightarrow (k7_setwiseo \\ & X1 X0 X2 (k1_setwiseo X1) X3 = k4_binop_1 X0 X2)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\exists X0.v1_xboole_0 X0 \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\exists X2.(m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1))) \wedge ((v1_xboole_0 X2) \wedge ((v1_relat_1 X2) \wedge ((\\ & v4_relat_1 X2 X0) \wedge (v5_relat_1 X2 X1)))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge ((v13_lattices \\ & X0) \wedge (l3_lattices X0)))) \Rightarrow ((v1_funct_1 (u2_lattices X0)) \wedge ((v1_funct_2 \\ & (u2_lattices X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) \\ & (u1_struct_0 X0)) \wedge (v1_setwiseo (u2_lattices X0) (u1_struct_0 \\ & X0)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v5_lattices X0) \wedge (l2_lattices \\ & X0))) \Rightarrow ((v1_funct_1 (u2_lattices X0)) \wedge ((v1_funct_2 (u2_lattices \\ & X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 \\ & X0)) \wedge (v2_binop_1 (u2_lattices X0) (u1_struct_0 X0)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v4_lattices X0) \wedge (l2_lattices \\ & X0))) \Rightarrow ((v1_funct_1 (u2_lattices X0)) \wedge ((v1_funct_2 (u2_lattices \\ & X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 \\ & X0)) \wedge (v1_binop_1 (u2_lattices X0) (u1_struct_0 X0)))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge (l1_struct_0 X0)) \Rightarrow (\neg v1_xboole_0 (u1_struct_0 X0)) \quad (9)$$

Assume the following.

$$v1_xboole_0 k1_xboole_0 \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.(l2_lattices\ X0) \Rightarrow & ((v1_funct_1\ (u2_lattices\ X0)) \wedge \\ & ((v1_funct_2\ (u2_lattices\ X0)\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (\\ & u1_struct_0\ X0))\ (u1_struct_0\ X0)) \wedge (m1_subset_1\ (u2_lattices \\ & X0)\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (\\ & u1_struct_0\ X0))\ (u1_struct_0\ X0)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0.(l3_lattices\ X0) \Rightarrow ((l1_lattices\ X0) \wedge (l2_lattices\ X0)) \quad (12)$$

Assume the following.

$$\forall X0.(l2_lattices\ X0) \Rightarrow (l1_struct_0\ X0) \quad (13)$$

Assume the following.

$$\forall X0.(v1_xboole_0\ (k1_setwise0\ X0)) \wedge (m1_subset_1\ (k1_setwise0\ X0)\ (k5_finsub_1\ X0)) \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0\ X0) \Rightarrow & (\forall X1.((\neg v2_struct_0\ X1) \wedge \\ & ((v10_lattices\ X1) \wedge (l3_lattices\ X1))) \Rightarrow (\forall X2.(m1_subset_1 \\ & X2\ (k5_finsub_1\ X0)) \Rightarrow (\forall X3.((v1_funct_1\ X3) \wedge ((v1_funct_2 \\ & X3\ X0\ (u1_struct_0\ X1)) \wedge (m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_zfmisc_1 \\ & X0\ (u1_struct_0\ X1)))))) \Rightarrow (k2_lattice2\ X0\ X1\ X2\ X3 = k7_setwise0 \\ & X0\ (u1_struct_0\ X1)\ (u2_lattices\ X1)\ X2\ X3))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3_lattices\ X0) \Rightarrow & (((\neg v2_struct_0\ X0) \wedge (v10_lattices \\ & X0)) \Rightarrow ((\neg v2_struct_0\ X0) \wedge ((v4_lattices\ X0) \wedge ((v5_lattices\ X0) \wedge \\ & ((v6_lattices\ X0) \wedge ((v7_lattices\ X0) \wedge ((v8_lattices\ X0) \wedge (v9_lattices \\ & X0)))))))) \end{aligned} \quad (16)$$

Theorem 1

$$\begin{aligned} \forall X0.(\neg v1_xboole_0\ X0) \Rightarrow & (\forall X1.(m1_subset_1\ X1\ (k5_finsub_1 \\ & X0)) \Rightarrow (\forall X2.((\neg v2_struct_0\ X2) \wedge ((v10_lattices\ X2) \wedge ((v13_lattices \\ & X2) \wedge (l3_lattices\ X2)))) \Rightarrow (\forall X3.((v1_funct_1\ X3) \wedge ((v1_funct_2 \\ & X3\ X0\ (u1_struct_0\ X2)) \wedge (m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_zfmisc_1 \\ & X0\ (u1_struct_0\ X2)))))) \Rightarrow (\forall X4.((v1_funct_1\ X4) \wedge ((v1_funct_2 \\ & X4\ X0\ (u1_struct_0\ X2)) \wedge (m1_subset_1\ X4\ (k1_zfmisc_1\ (k2_zfmisc_1 \\ & X0\ (u1_struct_0\ X2)))))) \Rightarrow ((k2_partfun1\ X0\ (u1_struct_0\ X2)\ X3 \\ & X1 = k2_partfun1\ X0\ (u1_struct_0\ X2)\ X4\ X1) \Rightarrow (k2_lattice2\ X0\ X2\ X1 \\ & X3 = k2_lattice2\ X0\ X2\ X1\ X4)))))) \end{aligned}$$