

## l20\_lattices

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Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $g3\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v10\_lattices : \iota \Rightarrow o$  be given. Let  $v14\_lattices : \iota \Rightarrow o$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v13\_lattices : \iota \Rightarrow o$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $l2\_lattices : \iota \Rightarrow o$  be given. Let  $v8\_lattices : \iota \Rightarrow o$  be given. Let  $k1\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v4\_lattices : \iota \Rightarrow o$  be given. Let  $v5\_lattices : \iota \Rightarrow o$  be given. Let  $v6\_lattices : \iota \Rightarrow o$  be given. Let  $v7\_lattices : \iota \Rightarrow o$  be given. Let  $v9\_lattices : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((v1\_funct\_1 X0) \wedge ((v1\_funct\_2 X0 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\
 & \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)) \wedge \\
 & (m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\
 & \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)))))) \Rightarrow \\
 & (\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\
 & \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)) \wedge \\
 & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\
 & \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)))))) \Rightarrow \\
 & (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 (g3\_lattices (k1\_zfmisc\_1 \\
 & \quad k1\_xboole\_0) X0 X1))) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\
 & \quad g3\_lattices (k1\_zfmisc\_1 k1\_xboole\_0) X0 X1))) \Rightarrow (X2 = X3))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_funct\_1 X0) \wedge ((v1\_funct\_2 X0 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\
& \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)) \wedge \\
& (m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\
& \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)))))) \Rightarrow \\
& (\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\
& \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)) \wedge \\
& (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\
& \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)))))) \Rightarrow \\
& ((\neg v2\_struct\_0 (g3\_lattices (k1\_zfmisc\_1 k1\_xboole\_0) X0 X1)) \wedge \\
& ((v10\_lattices (g3\_lattices (k1\_zfmisc\_1 k1\_xboole\_0) X0 X1)) \wedge \\
& ((v13\_lattices (g3\_lattices (k1\_zfmisc\_1 k1\_xboole\_0) X0 X1)) \wedge \\
& (l3\_lattices (g3\_lattices (k1\_zfmisc\_1 k1\_xboole\_0) X0 X1))))))
\end{aligned} \tag{2}$$

Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l3\_lattices X0)) \Rightarrow ((v8\_lattices \\
& \quad X0) \Leftrightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
& (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (k1\_lattices X0 (k2\_lattices \\
& \quad X0 X1 X2) X2 = X2))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l2\_lattices X0)) \Rightarrow ((v14\_lattices \\
& \quad X0) \Leftrightarrow (\exists X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge (\forall X2. \\
& (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((k1\_lattices X0 X1 X2 = X1) \wedge \\
& \quad (k1\_lattices X0 X2 X1 = X1))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_lattices X0)) \Rightarrow ((v13\_lattices \\
& \quad X0) \Leftrightarrow (\exists X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge (\forall X2. \\
& (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((k2\_lattices X0 X1 X2 = X1) \wedge \\
& \quad (k2\_lattices X0 X2 X1 = X1))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l3\_lattices X0) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge (v10\_lattices \\
& \quad X0)) \Rightarrow ((\neg v2\_struct\_0 X0) \wedge ((v4\_lattices X0) \wedge ((v5\_lattices X0) \wedge \\
& ((v6\_lattices X0) \wedge ((v7\_lattices X0) \wedge ((v8\_lattices X0) \wedge (v9\_lattices \\
& \quad X0))))))))))
\end{aligned} \tag{7}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((v1\_funct\_1 X0) \wedge ((v1\_funct\_2 X0 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\ & \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)) \wedge \\ & (m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\ & \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)))))) \Rightarrow \\ & (\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\ & \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_zfmisc\_1 \\ & \quad k1\_xboole\_0) (k1\_zfmisc\_1 k1\_xboole\_0)) (k1\_zfmisc\_1 k1\_xboole\_0)))))) \Rightarrow \\ & ((\neg v2\_struct\_0 (g3\_lattices (k1\_zfmisc\_1 k1\_xboole\_0) X0 X1)) \wedge \\ & (v10\_lattices (g3\_lattices (k1\_zfmisc\_1 k1\_xboole\_0) X0 X1)) \wedge \\ & (v14\_lattices (g3\_lattices (k1\_zfmisc\_1 k1\_xboole\_0) X0 X1)) \wedge \\ & (l3\_lattices (g3\_lattices (k1\_zfmisc\_1 k1\_xboole\_0) X0 X1)))))) \end{aligned}$$