

## t111\_tdlat\_2

(TMF3x57zpHtezLYFZ6mRo1AkUEGExmJCPJm)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  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  $v3\_tdlat\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_tdlat\_1 : \iota \Rightarrow \iota$  be given. Let  $k15\_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tops\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_setfam\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_tdlat\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_tops\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0)))) \Rightarrow ((v1\_tdlat\_2 X1 X0) \Rightarrow (\forall X2. (m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (u1\_struct\_0 (k4\_tdlat\_1 X0)))) \Rightarrow ((X2 = X1) \Rightarrow (k15\_lattice3 \\ & (k4\_tdlat\_1 X0) X2 = k4\_subset\_1 (u1\_struct\_0 X0) (k5\_setfam\_1 \\ & (u1\_struct\_0 X0) X1) (k1\_tops\_1 X0 (k2\_pre\_topc X0 (k5\_setfam\_1 \\ & (u1\_struct\_0 X0) X1)))))))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0)))) \Rightarrow ((v3\_tdlat\_2 X1 X0) \Rightarrow (v1\_tops\_2 X1 X0))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0)))) \Rightarrow ((v3\_tdlat\_2 X1 X0) \Rightarrow (v1\_tdlat\_2 X1 X0))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\forall X1. \\ & (l1\_pre\_topc\ X1)\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & X0)))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & X1)))\Rightarrow(((v3\_pre\_topc\ X3\ X1)\Rightarrow(k1\_tops\_1\ X1\ X3 = X3))\wedge((k1\_tops\_1 \\ & X0\ X2 = X2)\Rightarrow(v3\_pre\_topc\ X2\ X0)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\forall X1. \\ & (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow \\ & ((v1\_tops\_2\ X1\ X0)\Rightarrow(v3\_pre\_topc\ (k5\_setfam\_1\ (u1\_struct\_0\ X0) \\ & X1)\ X0))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1\_pre\_topc\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X0)))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X0)))\Rightarrow((r1\_tarski\ X1\ X2)\Rightarrow(r1\_tarski\ (k1\_tops\_1 \\ & X0\ X1)\ (k1\_tops\_1\ X0\ X2)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(r1\_tarski\ X1\ (k2\_pre\_topc\ X0\ X1))) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.(r1\_tarski\ X0\ X1)\Rightarrow(k2\_xboole\_0\ X0\ X1 = X1) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ & X0))\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0)))\Rightarrow(k4\_subset\_1\ X0\ X1\ X2 = \\ & k2\_xboole\_0\ X1\ X2) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.\exists X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0))\wedge(v1\_xboole\_0\ X1) \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(m1\_subset\_1\ (k5\_setfam\_1\ X0\ X1)\ (k1\_zfmisc\_1\ X0))) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((l1\_pre\_topc\ X0)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k2\_pre\_topc\ X0\ X1)\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X0))) \end{aligned} \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.((l1\_pre\_topc\ X0)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k1\_tops\_1\ X0\ X1)\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))) \quad (13)$$

**Theorem 1**

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0)))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow((v3\_tdlat\_2\ X1\ X0)\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ (k4\_tdlat\_1\ X0))))\Rightarrow((X2 = X1)\Rightarrow(k15\_lattice3\ (k4\_tdlat\_1\ X0)\ X2 = k1\_tops\_1\ X0\ (k2\_pre\_topc\ X0\ (k5\_setfam\_1\ (u1\_struct\_0\ X0)\ X1)))))))$$