l42_substlat (TMHEPpSsQq46esJ2p5zTzg8ydzEmftXkzQp)

October 27, 2020

Let $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $k5\_substlat : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5\_finsub\_1 : \iota \Rightarrow \iota$ be given. Let $k4\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3\_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1\_substlat : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1\_xboole\_0 : \iota \Rightarrow o$ be given. Let $k1\_zfmisc\_1 : \iota \Rightarrow \iota$ 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 $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1\_lattices : \iota \Rightarrow \iota$ be given. Let $u2\_lattices : \iota \Rightarrow \iota$ be given. Let $k2\_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2\_struct\_0 : \iota \Rightarrow o$ be given. Let $v3\_lattices : \iota \Rightarrow o$ be given. Let $v4\_finsub\_1 : \iota \Rightarrow o$ be given. Let $l2\_lattices : \iota \Rightarrow o$ be given. Let $l1\_lattices : \iota \Rightarrow o$ be given. Let $l3\_lattices : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (k5\_finsub\_1\ (k4\_partfun1\ X0\ X1)))\Rightarrow(k3\_substlat\ X0\ X1\ (k4\_substlat\ X0\ X1\ X2\ X2) = k3\_substlat\ X0\ X1\ X2) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m2\_subset\_1\ X2\ (k5\_finsub\_1\ (k4\_partfun1\ X0\ X1))\ (k1\_substlat\ X0\ X1))\Rightarrow(k3\_substlat\ X0\ X1\ X2 = X2) \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0\ X0)\wedge((\neg v1\_xboole\_0\ X1)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0))))\Rightarrow(\forall X2.(m2\_subset\_1\ X2\ X0\ X1)\Leftrightarrow(m1\_subset\_1\ X2\ X1)) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1\ X1)\wedge ((v1\_funct\_2\ X1\ (k2\_zfmisc\_1\ X0\ X0)\ X0)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ X0\ X0)\ X0)))))\wedge((m1\_subset\_1\ X2\ X0)\wedge (m1\_subset\_1\ X3\ X0)))\Rightarrow(k5\_binop\_1\ X0\ X1\ X2\ X3 = k1\_binop\_1\ X1\ X2\ X3) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m2\_subset\_1\ X2\ (k5\_finsub\_1\ (k4\_partfun1\ X0\ X1))\ (k1\_substlat\ X0\ X1))\Rightarrow(\forall X3.(m2\_subset\_1\ X3\ (k5\_finsub\_1\ (k4\_partfun1\ X0\ X1))\ (k1\_substlat\ X0\ X1))\Rightarrow(\forall X4.(m2\_subset\_1\ X4\ (k5\_finsub\_1\ (k4\_partfun1\ X0\ X1))\ (k1\_substlat\ X0\ X1))\Rightarrow(k1\_binop\_1\ (u1\_lattices\ (k5\_substlat\ X0\ X1))\ X2\ (k1\_binop\_1\ (u2\_lattices\ (k5\_substlat\ X0\ X1))\ X3\ X4) = k1\_binop\_1\ (u2\_lattices\ (k5\_substlat\ X0\ X1))\ (k1\_binop\_1\ (u1\_lattices\ (k5\_substlat\ X0\ X1))\ X2\ X3)\ (k1\_binop\_1\ (u1\_lattices\ (k5\_substlat\ X0\ X1))\ X2\ X4)))) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ (k5\_substlat\ X0\ X1)))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ (k5\_substlat\ X0\ X1)))\Rightarrow(k2\_lattices\ (k5\_substlat\ X0\ X1)\ X2\ X3 = k2\_lattices\ (k5\_substlat\ X0\ X1)\ X3\ X2)) \tag{6}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ (k5\_substlat\ X0\ X1)))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ (k5\_substlat\ X0\ X1)))\Rightarrow(k1\_lattices\ (k5\_substlat\ X0\ X1)\ (k2\_lattices\ (k5\_substlat\ X0\ X1)\ X2\ X3)\ X3 = X3)) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ (k5\_substlat\ X0\ X1)))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ (k5\_substlat\ X0\ X1)))\Rightarrow(k1\_lattices\ (k5\_substlat\ X0\ X1)\ X2\ X3 = k1\_lattices\ (k5\_substlat\ X0\ X1)\ X3\ X2)) \tag{8}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1\_subset\_1\ X2\ (k1\_substlat\ X0\ X1))\wedge(m1\_subset\_1\ X3\ (k1\_substlat\ X0\ X1)))\Rightarrow(k2\_substlat\ X0\ X1\ X2\ X2 = X2) \tag{9}$$

Assume the following.

$$\forall X0.\forall X1.(\neg v2\_struct\_0\ (k5\_substlat\ X0\ X1))\wedge(v3\_lattices\ (k5\_substlat\ X0\ X1)) \tag{10}$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0\ (k5\_finsub\_1\ X0))\wedge(v4\_finsub\_1\ (k5\_finsub\_1\ X0)) \tag{11}$$

Assume the following.

$$\forall X0.\forall X1.\neg v1\_xboole\_0\ (k1\_substlat\ X0\ X1) \tag{12}$$

Assume the following.

$$\forall X0.(l2\_lattices\ X0)\Rightarrow((v1\_funct\_1\ (u2\_lattices\ X0))\wedge((v1\_funct\_2\ (u2\_lattices\ X0)\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X0))\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ (u2\_lattices\ X0)\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X0))\ (u1\_struct\_0\ X0)))))) \tag{13}$$

Assume the following.

$$\forall X0.(l1\_lattices\ X0)\Rightarrow((v1\_funct\_1\ (u1\_lattices\ X0))\wedge((v1\_funct\_2\ (u1\_lattices\ X0)\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X0))\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ (u1\_lattices\ X0)\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X0))\ (u1\_struct\_0\ X0)))))) \tag{14}$$

Assume the following.

$$\forall X0.(l3\_lattices\ X0)\Rightarrow((l1\_lattices\ X0)\wedge(l2\_lattices\ X0)) \tag{15}$$

Assume the following.

$$\forall X0.\forall X1.(v3\_lattices\ (k5\_substlat\ X0\ X1))\wedge(l3\_lattices\ (k5\_substlat\ X0\ X1)) \tag{16}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1\_subset\_1\ X2\ (k1\_substlat\ X0\ X1))\wedge(m1\_subset\_1\ X3\ (k1\_substlat\ X0\ X1)))\Rightarrow(m1\_subset\_1\ (k2\_substlat\ X0\ X1\ X2\ X3)\ (k5\_finsub\_1\ (k4\_partfun1\ X0\ X1))) \tag{17}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0)\wedge(l1\_lattices\ X0))\wedge((m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k2\_lattices\ X0\ X1\ X2)\ (u1\_struct\_0\ X0)) \tag{18}$$

Assume the following.

$$\forall X0.\forall X1.m1\_subset\_1\ (k1\_substlat\ X0\ X1)\ (k1\_zfmisc\_1\ (k5\_finsub\_1\ (k4\_partfun1\ X0\ X1))) \tag{19}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0)\wedge(l2\_lattices\ X0))\wedge((m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k1\_lattices\ X0\ X1\ X2)\ (u1\_struct\_0\ X0)) \tag{20}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((v3\_lattices\ X2)\wedge(l3\_lattices\ X2))\Rightarrow((X2 = k5\_substlat\ X0\ X1)\Leftrightarrow((u1\_struct\_0\ X2 = k1\_substlat\ X0\ X1)\wedge(\forall X3.(m2\_subset\_1\ X3\ (k5\_finsub\_1\ (k4\_partfun1\ X0\ X1))\ (k1\_substlat\ X0\ X1))\Rightarrow(\forall X4.(m2\_subset\_1\ X4\ (k5\_finsub\_1\ (k4\_partfun1\ X0\ X1))\ (k1\_substlat\ X0\ X1))\Rightarrow((k1\_binop\_1\ (u2\_lattices\ X2)\ X3\ X4 = k3\_substlat\ X0\ X1\ (k2\_substlat\ X0\ X1\ X3\ X4))\wedge(k1\_binop\_1\ (u1\_lattices\ X2)\ X3\ X4 = k3\_substlat\ X0\ X1\ (k4\_substlat\ X0\ X1\ X3\ X4)))))))) \tag{21}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_lattices\ X0))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(k2\_lattices\ X0\ X1\ X2 = k5\_binop\_1\ (u1\_struct\_0\ X0)\ (u1\_lattices\ X0)\ X1\ X2))) \tag{22}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l2\_lattices\ X0))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(k1\_lattices\ X0\ X1\ X2 = k5\_binop\_1\ (u1\_struct\_0\ X0)\ (u2\_lattices\ X0)\ X1\ X2))) \tag{23}$$

Theorem 1

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ (k5\_substlat\ X0\ X1)))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ (k5\_substlat\ X0\ X1)))\Rightarrow(k2\_lattices\ (k5\_substlat\ X0\ X1)\ X2\ (k1\_lattices\ (k5\_substlat\ X0\ X1)\ X2\ X3) = X2))$$