Inference at $*$ 1 1 0 0
of proof for Lemma absval_eq:

1. $x : \mathbb{Z}$
2. $y : \mathbb{Z}$
$\vdash$ (if $0 \leq$z x then x else -x fi = if $0 \leq$z y then y else -y fi) $\Longleftrightarrow$ $x = \pm\, y$
by PERMUTE{1:n,
2:n,
3:n,
4:n,
5:n,
6:n,
7:n,
8:n,
9:n,
10:n,
11:n,
12:n,
10:n,
13:n,
11:n,
14:n,
15:n,
16:n,
17:n,
18:n,
16:n,
15:n,
19:n}

1: . . . . .wf. . . . . NILNIL

$\vdash$ $0 \leq$z $x \in \mathbb{B}$
2: . . . . .wf. . . . . NILNIL

$\vdash$ $\mathbb{B} \in$ Type
3: . . . . .wf. . . . . NILNIL

3. $0 \leq$z $x =$ tt
$\vdash$ $(0 \leq$z $x =$ tt$) \in \mathbb{P}_1$
4: . . . . .wf. . . . . NILNIL

3. $0 \leq$z $x =$ tt
$\vdash$ $(\uparrow 0 \leq$z $x) \in \mathbb{P}_1$

5: . . . . .wf. . . . . NILNIL

3. $0 \leq_z x = \mathrm{tt}$
$\vdash (0 \leq x) \in \mathbb{P}_1$
6: . . . . .wf. . . . . NILNIL

3. $0 \leq_z x = \mathrm{tt}$
$\vdash 0 \leq_z x \in \mathbb{B}$
7: . . . . .wf. . . . . NILNIL

3. $0 \leq_z x = \mathrm{tt}$
$\vdash 0 \in \mathbb{Z}$
8: . . . . .wf. . . . . NILNIL

3. $0 \leq_z x = \mathrm{tt}$
$\vdash x \in \mathbb{Z}$
9:

3. $0 \leq x$
$\vdash (\mathrm{if\ tt\ then}\ x\ \mathrm{else}\ \text{-}x\ \mathrm{fi} = \mathrm{if}\ 0 \leq_z y\ \mathrm{then}\ y\ \mathrm{else}\ \text{-}y\ \mathrm{fi}\ ) \iff x = \pm\, y$
10: . . . . .wf. . . . . NILNIL

3. $0 \leq_z x = \mathrm{ff}$
$\vdash (0 \leq_z x = \mathrm{ff}) \in \mathbb{P}_1$
11: . . . . .wf. . . . . NILNIL

3. $0 \leq_z x = \mathrm{ff}$
$\vdash (\uparrow x <_z 0) \in \mathbb{P}_1$
12: . . . . .wf. . . . . NILNIL

3. $0 \leq_z x = \mathrm{ff}$
$\vdash (x < 0) \in \mathbb{P}_1$
13: . . . . .wf. . . . . NILNIL

3. $0 \leq_z x = \mathrm{ff}$
$\vdash (\uparrow(\neg_b 0 \leq_z x)) \in \mathbb{P}_1$
14: . . . . .wf. . . . . NILNIL

3. $0 \leq_z x = \mathrm{ff}$
$\vdash 0 \leq_z x \in \mathbb{B}$
15: . . . . .wf. . . . . NILNIL

3. $0 \leq_z x = \mathrm{ff}$
$\vdash 0 \in \mathbb{Z}$
16: . . . . .wf. . . . . NILNIL

3. $0 \leq \text{z}\ x = \text{ff}$
$\vdash x \in \mathbb{Z}$
17: .....antecedent..... NILNIL

3. $0 \leq \text{z}\ x = \text{ff}$
$\vdash$ True
18: .....wf..... NILNIL

3. $0 \leq \text{z}\ x = \text{ff}$
4. $(\uparrow(\neg_b 0 \leq \text{z}\ x)) = (\uparrow x <\text{z}\ 0)$
$\vdash \mathbb{P}_1 = \mathbb{P}_1$
19:

3. $x < 0$
$\vdash$ (if ff then x else -x fi = if $0 \leq \text{z}\ y$ then y else -y fi) $\iff x = \pm\ y$
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http://www.nuprl.org/FDLcontent/p0_942988_/p121_73350_{absval_eq}1_1_0_0.html