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

1. i : $\mathbb{Z}$
$\vdash$ (if 0 $\leq$z i then i else -i fi = 0) $\iff$ (i = 0)
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 $i \in \mathbb{B}$
2: .....wf..... NILNIL

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

2. 0 $\leq$z i = tt
$\vdash$ (0 $\leq$z i = tt) $\in \mathbb{P}_1$
4: .....wf..... NILNIL

2. 0 $\leq$z i = tt
$\vdash$ ($\uparrow$0 $\leq$z i) $\in \mathbb{P}_1$
5: .....wf..... NILNIL

2. $0 \leq$z $i =$ tt

$\vdash (0 \leq i) \in \mathbb{P}_1$

6: . . . . .wf. . . . . NILNIL

2. $0 \leq$z $i =$ tt

$\vdash 0 \leq$z $i \in \mathbb{B}$

7: . . . . .wf. . . . . NILNIL

2. $0 \leq$z $i =$ tt

$\vdash 0 \in \mathbb{Z}$

8: . . . . .wf. . . . . NILNIL

2. $0 \leq$z $i =$ tt

$\vdash i \in \mathbb{Z}$

9:

2. $0 \leq i$

$\vdash$ (if tt then i else -i fi $= 0) \Longleftrightarrow (i = 0)$

10: . . . . .wf. . . . . NILNIL

2. $0 \leq$z $i =$ ff

$\vdash (0 \leq$z $i =$ ff$) \in \mathbb{P}_1$

11: . . . . .wf. . . . . NILNIL

2. $0 \leq$z $i =$ ff

$\vdash (\uparrow i <$z $0) \in \mathbb{P}_1$

12: . . . . .wf. . . . . NILNIL

2. $0 \leq$z $i =$ ff

$\vdash (i < 0) \in \mathbb{P}_1$

13: . . . . .wf. . . . . NILNIL

2. $0 \leq$z $i =$ ff

$\vdash (\uparrow(\neg_b 0 \leq$z $i)) \in \mathbb{P}_1$

14: . . . . .wf. . . . . NILNIL

2. $0 \leq$z $i =$ ff

$\vdash 0 \leq$z $i \in \mathbb{B}$

15: . . . . .wf. . . . . NILNIL

2. $0 \leq$z $i =$ ff

$\vdash 0 \in \mathbb{Z}$

16: . . . . .wf. . . . . NILNIL

2. $0 \leq$z $i =$ ff

$\vdash i \in \mathbb{Z}$

17: .....antecedent..... NILNIL

2. $0 \leq$z $i =$ ff

$\vdash$ True

18: .....wf..... NILNIL

2. $0 \leq$z $i =$ ff
3. $(\uparrow(\neg_b 0 \leq$z $i)) = (\uparrow i <$z $0)$

$\vdash \mathbb{P}_1 = \mathbb{P}_1$

19:

2. $i < 0$

$\vdash$ (if ff then i else -i fi $= 0) \iff (i = 0)$

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