

## round-step1<sup>11,40</sup>

$\forall es:\text{ES}, x, free:\text{Id}, n:\mathbb{N}, e:\text{E}.$

$@\text{loc}(e)(x:\text{Id})$

$\Rightarrow (\neg((x \text{ after } e) = (x \text{ when } e) \in \text{Id}))$

$\Rightarrow \langle n, 0 \rangle < \text{rank}(e)$

$\Rightarrow (\exists e':\text{E}$

$(e' \leq_{\text{loc}} e$

$\& \text{rank}(e') = \langle n, 1 \rangle \in (\mathbb{N} \times \mathbb{N})$

$\& (\neg((x \text{ after } e') = (x \text{ when } e') \in \text{Id}))$

$\& ((\uparrow x \text{ changed before } e') \Rightarrow ((x \text{ when } e') = free))))$