

causal-predecessor^{11,40}

$\text{causal-predecessor}(es;p) \equiv_{\text{def}} \forall e:\mathbf{E}. (\uparrow \text{can-apply}(p;e) \Rightarrow (\text{do-apply}(p;e) < e))$

clarification:

$\text{causal-predecessor}(es;p)$
 $\equiv_{\text{def}} \forall e:\text{es-}\mathbf{E}(es). (\uparrow \text{can-apply}(p;e) \Rightarrow \text{es-causal}(es; \text{do-apply}(p;e); e))$