

es-first-at-since'^{0,22}

$$\begin{aligned} & \text{es-first-at-since}'(es; i; e; e.R(e); e.P(e)) \\ \equiv_{\text{def}} & \text{loc}(e) = i \\ & \quad \& R(e) \\ & \quad \& (\exists e': \mathbb{E}. (e' <_{\text{loc}} e) \& P(e') \& (\forall e'': \mathbb{E}. e' \leq e'' \Rightarrow (e'' <_{\text{loc}} e) \Rightarrow \neg R(e''))) \end{aligned}$$

clarification:

$$\begin{aligned} & \text{es-first-at-since}'(es; i; e; e.R(e); e.P(e)) \\ \equiv_{\text{def}} & \text{es-loc}(es; e) = i \in \text{Id} \\ & \quad \& R(e) \\ & \quad \& (\exists e': \text{es-E}(es). \\ & \quad \quad \text{es-locl}(es; e'; e) \\ & \quad \quad \& P(e') \& (\forall e'': \text{es-E}(es). \text{es-le}(es; e'; e'') \Rightarrow \text{es-locl}(es; e''; e) \Rightarrow \neg R(e''))) \end{aligned}$$