

es-pstar-q^{0,22}

$$\begin{aligned} & [e_1; e_2] \sim ([a, b].p(a; b)) * [a, b].q(a; b) \\ \equiv_{\text{def}} & \exists m: \mathbb{N}^+, f: (\mathbb{N}_{< m} \rightarrow \{e: \mathbb{E} \mid \text{loc}(e) = \text{loc}(e_1)\}). \\ & f(0) = e_1 \ \& \ f(m-1) \leq e_2 \\ & \ \& \ (\forall i: \mathbb{N}_{< m-1}. (f(i) < \text{loc } f(i+1))) \ \& \ (\forall i: \mathbb{N}_{< m-1}. p(f(i); \text{pred}(f(i+1)))) \\ & \ \& \ q(f(m-1); e_2) \end{aligned}$$

clarification:

$$\begin{aligned} & \text{es-pstar-q}(es; a, b.p(a; b); a, b.q(a; b); e_1; e_2) \\ \equiv_{\text{def}} & \exists m: \mathbb{N}^+, f: (\{0..m^-\} \rightarrow \{e: \text{es-E}(es) \mid \text{es-loc}(es; e) = \text{es-loc}(es; e_1) \in \text{Id}\}). \\ & f(0) = e_1 \in \text{es-E}(es) \ \& \ \text{es-le}(es; f(m-1); e_2) \\ & \ \& \ (\forall i: \{0..(m-1)^-\}. \text{es-locl}(es; (f(i)); (f(i+1)))) \\ & \ \& \ (\forall i: \{0..(m-1)^-\}. p(f(i); \text{es-pred}(es; (f(i+1)))))) \\ & \ \& \ q(f(m-1); e_2) \end{aligned}$$