

effect_p^{11,40}

$$\begin{aligned} & \text{effect_p}(es; i; ds; k; T; x; f) \\ \equiv_{\text{def}} & ((\forall x:\text{Id. subtype_rel}(es\text{-vartype}(es; i; x); \text{fpf-cap}(ds; \text{id-deq}; x; \text{top}))) \\ & \wedge \text{subtype_rel}(es\text{-kindtype}(es; i; k); T)) \\ & c \wedge \text{alle-at}(es; \\ & \quad i; \\ & \quad e.((es\text{-kind}(es; e) = k) \\ & \quad \Rightarrow (\text{subtype_rel}(es\text{-valtype}(es; e); T) \\ & \quad \quad c \wedge (\text{es_state_after}(es; e)(x) = f(\text{es_state_when}(es; e), \text{es-val}(es; e)))))) \\ & \quad) \end{aligned}$$

clarification:

$$\begin{aligned} & \text{effect_p}(es; i; ds; k; T; x; f) \\ \equiv_{\text{def}} & ((\forall x:\text{Id. subtype_rel}(es\text{-vartype}(es; i; x); \text{fpf-cap}(ds; \text{id-deq}; x; \text{top}))) \\ & \wedge \text{subtype_rel}(es\text{-kindtype}(es; i; k); T)) \\ & c \wedge \text{alle-at}(es; \\ & \quad i; \\ & \quad e.((es\text{-kind}(es; e) = k \in \text{Knd}) \\ & \quad \Rightarrow (\text{subtype_rel}(es\text{-valtype}(es; e); T) \\ & \quad \quad c \wedge (\text{es_state_after}(es; e)(x) \\ & \quad \quad \quad = \\ & \quad \quad \quad f(\text{es_state_when}(es; e), \text{es-val}(es; e)) \\ & \quad \quad \quad \in \text{rationals} \rightarrow \text{fpf-cap}(ds; \text{id-deq}; x; \text{top})))))) \end{aligned}$$