

causal-order-preserving^{11,40}

$a.f(a)$ is $c<$ preserving on $e.P(e) \equiv_{\text{def}} \forall e, e':\{e:\mathbb{E} \mid P(e)\} . (e < e') \Rightarrow (f(e) < f(e'))$

clarification:

$\text{causal-order-preserving}(es; a.f(a); e.P(e))$
 $\equiv_{\text{def}} \forall e:\{e:\text{es-}\mathbb{E}(es) \mid P(e)\} , e':\{e:\text{es-}\mathbb{E}(es) \mid P(e)\} .$
 $\text{es-causl}(es; e; e') \Rightarrow \text{es-causl}(es; f(e); f(e'))$