

Figure 2: Dynamics of the simply-typed λ -calculus

VAL-UNIT	VAL-PAIR	VAL-INL	VAL-INR	VAL-LAM
$\overline{\langle \rangle \text{ val}}$	$\overline{\langle e_1, e_2 \rangle \text{ val}}$	$\overline{\text{inl}(e) \text{ val}}$	$\overline{\text{inr}(e) \text{ val}}$	$\overline{\lambda x : \tau. e \text{ val}}$
VAL-NUM	D-PLUS		D-PLUS-1	
$\frac{n \in \mathbb{N}}{\text{num}[n] \text{ val}}$	$\frac{n_1 + n_2 = n}{\text{plus}(\text{num}[n_1]; \text{num}[n_2]) \mapsto \text{num}[n]}$		$\frac{e_1 \mapsto e'_1}{\text{plus}(e_1; e_2) \mapsto \text{plus}(e'_1; e_2)}$	
D-PLUS-2	D-LET		D-PROJ-TUPLE-1	
$\frac{e_1 \text{ val} \quad e_2 \mapsto e'_2}{\text{plus}(e_1; e_2) \mapsto \text{plus}(e_1; e'_2)}$	$\frac{}{\text{let}(e_1; x. e_2) \mapsto e_2[e_1/x]}$		$\frac{}{\pi_1(\langle e_1, e_2 \rangle) \mapsto e_1}$	
D-PROJ-TUPLE-2	D-PROJ-1		D-PROJ-2	
$\frac{}{\pi_1(\langle e_1, e_2 \rangle) \mapsto e_2}$	$\frac{e \mapsto e'}{\pi_1(e) \mapsto \pi_1(e')}$		$\frac{e \mapsto e'}{\pi_2(e) \mapsto \pi_2(e')}$	
D-ABORT-1	D-CASE-INL			
$\frac{e \mapsto e'}{\text{abort}(e) \mapsto \text{abort}(e')}$	$\frac{}{\text{case}(\text{inl}(e); x. e_1; y. e_2) \mapsto e_1[e/x]}$			
D-CASE-INR	D-CASE-1			
$\frac{}{\text{case}(\text{inr}(e); x. e_1; y. e_2) \mapsto e_2[e/y]}$	$\frac{e \mapsto e'}{\text{case}(e; x. e_1; y. e_2) \mapsto \text{case}(e'; x. e_1; y. e_2)}$			
D-APP-1	D-BETA			
$\frac{e_1 \mapsto e'_1}{e_1(e_2) \mapsto e'_1(e_2)}$	$\frac{}{(\lambda x : \tau. e_1)(e_2) \mapsto e_1[e_2/x]}$			