A LaTeX and ZSL Input Notations

A.1 Paragraphs

A.1.1 Axiom Box

$$\begin{array}{|l} D_1;\ \ldots;\ D_m \\ \hline P_1;\ \ldots;\ P_n \end{array}$$

LaTeX input:

```
\begin{axdef}
   D_1; ... ; D_m
\where
   P_1; ... ; P_n
\end{axdef}
```

ZSL input – text style:

```
global
   D1; ... ; Dm
axiom
   P1; ... ; Pn
end axiom
```

ZSL input – box style:

```
|  D1; ... ; Dm
|-------
|  P1; ... ; Pn
```

$$\begin{array}{|l} D_1;\ \ldots;\ D_m \end{array}$$

LaTeX input:

```
\begin{axdef}
   D_1; ... ; D_m
\end{axdef}
```

ZSL input – text style:

```
global
   D1; ... ; Dm
end global
```

ZSL input – box style:

```
|  D1; ... ; Dm
```

$P_1; \ \ldots; \ P_n$

LaTeX input:

```
\begin{zed}
   P_1; ... ; P_n
\end{zed}
```

ZSL input

```
axiom
   P1; ... ; Pn
end axiom
```

A.1.2 Schema Box

S

$D_1; \ \ldots; \ D_m$

$P_1; \ \ldots; \ P_n$

LaTeX input:

```
\begin{schema}{S}
   D_1; ... ; D_m
\where
   P_1; ... ; P_n
\end{schema}
```

ZSL input – text style:

```
schema S
   D1; ... ; Dm
where
   P1; ... ; Pn
end schema
```

ZSL input – box style:

```
--- S --------------------
|  D1; ... ; Dm
|-------
|  P1; ... ; Pn
--------------------------
```

A.1.3 Generic Schema Box

$S[X_1, \ldots, X_k]$

$D_1; \ \ldots; \ D_m$

$P_1; \ \ldots; \ P_n$

LaTeX input:

```
\begin{schema}{S[X_1,...X_k]}
   D_1; ... ; D_m
\where
   P_1; ... ; P_n
\end{schema}
```

ZSL input – text style:

```
schema S [X1, ... , Xk]
   D1; ... ; Dm
where
   P1; ... ; Pn
end schema
```

ZSL input – box style:

```
--- S [X1, ... , Xk] -----
|  D1; ... ; Dm
|-------
|  P1; ... ; Pn
--------------------------
```

A.1.4 Generic Box

$$
\begin{array}{|l}
\hline\hline [X_1, \ldots, X_k] \\
D_1; \ \ldots; \ D_m \\
\hline
P_1; \ \ldots; \ P_n \\
\hline
\end{array}
$$

LaTeX input `zed`:

```
\begin{gendef}[X_1,...,X_k]
   D_1; ... ; D_m
\where
   P_1; ... ; P_n
\end{gendef}
```

LaTeX input `oz`:

```
\begin{gendef}{X_1,...,X_k}
   D_1; ... ; D_m
\where
   P_1; ... ; P_n
\end{gendef}
```

ZSL input – text style:

```
generic [X1, ... , Xk]
   D1; ... ; Dm
where
   P1; ... ; Pn
end generic
```

ZSL input – box style:

```
=== [X1, ... , Xk] ==========
|  D1; ... ; Dm
|-------
|  P1; ... ; Pn
----------------------------
```

A.1.5 Schema Definition

$S \mathrel{\widehat=} [D \mid P]$

LaTeX zed
```
S \defs [ D | P ]
```

ZSL
```
S =^= [ D | P ]
S is [ D | P ]
```

LaTeX oz
```
S \sdef [ D | P ]
```

A.1.6 Given Set

$[T_1, \ldots, T_n]$

LaTeX
```
[T_1, ..., T_n]
```

ZSL
```
[T1, ..., Tn]
```

A.1.7 Equivalence Definition

$id == Exp$

LaTeX zed
```
id == Exp
```

ZSL
```
id == Exp
```

LaTeX oz
```
id \defs Exp
```

A.1.8 Free Type Definition

$$
\begin{array}{rcl}
T & ::= & c_1 \mid \ldots \mid c_m \\
 & \mid & d_1 \langle\!\langle E_1[T] \rangle\!\rangle \\
 & \mid & \ldots \\
 & \mid & d_n \langle\!\langle E_n[T] \rangle\!\rangle
\end{array}
$$

LaTeX input zed:

```
\begin{syntax}
T & ::= & c_1 | ... | c_m \\
  & | & d_1 \ldata E_1[T] \rdata \\
  & | & ... \\
  & | & d_n \ldata E_n[T] \rdata
\end{syntax}
```

LaTeX input oz:

```
\begin{syntax}
T & \ddef & c_1 | ... | c_m \\
  & | & d_1 \lang E_1[T] \rang \\
  & | & ... \\
  & | & d_n \lang E_n[T] \rang
\end{syntax}
```

ZSL input:

```
T ::= c1 | ... | cm
    | d1 << E1[T] >>
    | ...
    | dn << En[T] >>
```

A.1.9 Schema Expressions

		LaTeX	ZSL
$\forall D \mid P \bullet S$		`\forall D	P @ S`	`forall D	P @ S`
	oz only ▶	`\all D	P \dot S`	
$\exists D \mid P \bullet S$		`\exists D	P @ S`	`exists D	P @ S`
	oz only ▶	`\exi D	P \dot S`	
$\exists_1 D \mid P \bullet S$		`\exists_1 D	P @ S`	`exists1 D	P @ S`
	oz only ▶	`\exione D	P \dot S`	
$[D \mid P]$		`[D	P]`	`[D	P]`
ΔS		`\Delta S`	`Delta S`
ΞS		`\Xi S`	`Xi S`
$S[T_1, \ldots, T_n]$		`S[T_1,...,T_n]`	`S[T1,...,Tn]`
$S[x_1/y_1, \ldots, x_n/y_n]$		`S[x_1/y_1,...,x_n/y_n]`	`S[x1/y1,...,xn/yn]`
$\mathrm{pre}\, S$		`\pre S`	`pre S`
$\neg S$		`\lnot S`	`not S`
$S_1 \land S_2$		`S_1 \land S_2`	`S1 and S2`
			`S1 /\ S2`
$S_1 \lor S_2$		`S_1 \lor S_2`	`S1 or S2`
			`S1 \/ S2`
$S_1 \Rightarrow S_2$		`S_1 \implies S_2`	`S1 implies S2`
	oz only ▶	`S_1 \imp S_2`	`S1 => S2`
$S_1 \Leftrightarrow S_2$		`S_1 \iff S_2`	`S1 iff S2`
			`S1 <=> S2`
$S_1 \upharpoonright S_2$		`S_1 \project S_2`	`S1 project S2`
			`S1 |\ S2`
$S \setminus (v_1, \ldots, v_n)$		`S \hide (v_1,...,v_n)`	`S hide (v1,...,vn)`
	oz only ▶	`S \zhide (v_1,...,v_n)`	`S \\ (v1,...,vn)`
$S_1 \fatsemi S_2$		`S_1 \semi S_2`	`S1 semi S2`
	oz only ▶	`S_1 \zcmp S_2`	`S1 // S2`
$S_1 \gg S_2$		`S_1 \pipe S_2`	`S1 pipe S2`
	oz only ▶	`S_1 \zpipe S_2`	

A.1.10 Predicates

		LaTeX	ZSL
$\forall D \mid P \bullet Q$		`\forall D | P @ Q`	`forall D | P @ Q`
	oz only ▶	`\all D | P \dot S`	
$\exists D \mid P \bullet Q$		`\exists D | P @ Q`	`exists D | P @ Q`
	oz only ▶	`\exi D | P \dot S`	
$\exists_1 D \mid P \bullet Q$		`\exists_1 D | P @ Q`	`exists1 D | P @ Q`
	oz only ▶	`\exione D | P \dot S`	
let $v == e \bullet P$		`\zlet v==e @ P`	`let v==e @ P`
	oz only ▶	`\zlet v==e \dot P`	
$p \land q$		`p \land q`	`p and q` `p /\ q`
$p \lor q$		`p \lor q`	`p or q` `p \/ q`
$p \Rightarrow q$		`p \implies q`	`p implies q`
	oz only ▶	`p \imp q`	`p => q`
$p \Leftrightarrow q$		`p \iff q`	`p iff q` `p <=> q`
$\neg p$		`\lnot p`	`not p`
true		`true`	`true` `TRUE`
false		`false`	`false` `FALSE`

A.2 Expressions

A.2.1 Lambda Expression

		LaTeX	ZSL
$\lambda D \mid P \bullet E$		`\lambda D | P @ E`	`lambda D | P @ E`

A.2.2 Definite Description

		LaTeX	ZSL
$\mu D \mid P \bullet E$		`\mu D | P @ E`	`mu D | P @ E` `unique D | P @ E`
	oz only ▶	`\mu D | P \dot E`	

A.2.3 Conditional expression

		LaTeX	ZSL
if P **then** E_1 **else** E_2		`\zif P \zthen E_1 \zelse E_2`	`if P then E1 else E2`

A.2.4 Local definition

		LaTeX	ZSL
let $v == e \bullet E$		`\zlet v==e @ E`	`let v==e @ E`
	oz only ▶	`\zlet v==e \dot E`	

A.2.5 Sets

		LaTeX	ZSL
$\{x_1, \ldots, x_n\}$		`\{ x_1, ... , x_n \}`	`{ x1, ..., xn }`
$\{D \mid P \bullet E\}$		`\{ D | P @ E \}`	`{ D | P @ E }`
	oz only ▶	`\{ D | P \dot E \}`	
$S_1 \times S_2$		`S_1 \cross S_2`	`S1 & S2`
$S_1 = S_2$		`S_1 = S_2`	`S1 = S2`
$S_1 \neq S_2$		`S_1 \neq S_2`	`S1 /= S2`
$x \in S$		`x \in S`	`x in S`
	oz only ▶	`x \mem S`	
$x \notin S$		`x \notin S`	`x notin S`
	oz only ▶	`x \nem S`	
$\varnothing$		`\empty`	`{}`
$S_1 \subset S_2$		`S_1 \subset S_2`	`S1 subset S2`
	oz only ▶	`S_1 \psubs S_2`	
$S_1 \subseteq S_2$		`S_1 \subseteq S_2`	`S1 subseteq S2`
	oz only ▶	`S_1 \subs S_2`	
$\mathbb{P}\, S$		`\power S`	`P S`
	oz only ▶	`\pset S`	
$\mathbb{P}_1\, S$		`\power_1 S`	`P1 S`
	oz only ▶	`\psetone S`	
$\mathbb{F}\, S$		`\finset S`	`F S`
	oz only ▶	`\fset S`	
$\mathbb{F}_1\, S$		`\finset_1 S`	`F1 S`
	oz only ▶	`\fsetone S`	
$S_1 \cup S_2$		`S_1 \cup S_2`	`S1 setunion S2`
	oz only ▶	`S_1 \uni S_2`	`S1 || S2`
$S_1 \cap S_2$		`S_1 \cap S_2`	`S1 setint S2`
	oz only ▶	`S_1 \int S_2`	`S1 && S2`
$S_1 \setminus S_2$		`S_1 \setminus S_2`	`S1 setminus S2` `S1 \ S2`
$\bigcup SS$		`\bigcup SS`	`Union SS`

$\bigcap SS$		`\bigcap SS`	`Intersection SS`

A.2.6 Ordered Pairs

		LaTeX	ZSL
$x \mapsto y$		`x \mapsto y`	`x mapsto y`
	oz only ▶	`x \map y`	`x -> y`
first P		`first P`	`first P`
second P		`second P`	`second P`

A.2.7 Relations

		LaTeX	ZSL
$A \leftrightarrow B$		`A \rel B`	`A <-> B`
			`A rel B`
$x \underline{R} y$		`x \inrel{R} y`	`x _R_ y`
$\mathrm{dom}\, R$		`\dom R`	`dom R`
$\mathrm{ran}\, R$		`\ran R`	`ran R`
$\mathrm{id}\, S$		`\id S`	`id S`
$R_1 \comp R_2$		`R_1 \comp R_2`	`R1 comp R2`
	oz only ▶	`R_1 \fcmp R_2`	`R1 :> R2`
$R_1 \circ R_2$		`R_1 \circ R_2`	`R1 backcomp R2`
	oz only ▶	`R_1 \cmp R_2`	`R1 <: R2`
$R_1 \lhd R_2$		`R_1 \dres  R_2`	`R1 dres R2`
			`R1 <| R2`
$R_1 \ndres R_2$		`R_1 \ndres  R_2`	`R1 dsub R2`
	oz only ▶	`R_1 \dsub R_2`	`R1 <+ R2`
$R_1 \rhd R_2$		`R_1 \rres R_2`	`R1 rres R2`
			`R1 |> R2`
$R_1 \nrres R_2$		`R_1 \nrres R_2`	`R1 rsub R2`
	oz only ▶	`R_1 \rsub R_2`	`R1 +> R2`
$R_1 \oplus R_2$		`R_1 \oplus R_2`	`R1 oplus R2`
	oz only ▶	`R_1 \fovr R_2`	`R1 += R2`
$R(\!\| S \|\!)$		`R \limg S \rimg`	`R (| S |)`
R^{-1}		`R \inv`	`R~`
			`R inversion`
R^*		`R \star`	`R^*`
	oz only ▶	`R \rtcl`	`R rtclosure`
R^+		`R \plus`	`R^+`
	oz only ▶	`R \tcl`	`R tclosure`
R^k		`R \bsup k \esup`	`R^(k)`

A.2.8 Functions

		LaTeX	ZSL
$A \pfun B$		`A \pfun B`	`A +-> B`
			`A pfun B`
$A \rightarrow B$		`A \fun B`	`A --> B`
	oz only ▶	`A \tfun B`	`A fun B`
$A \pinj B$		`A \pinj B`	`A >+> B`
			`A pinj B`
$A \rightarrowtail B$		`A \inj B`	`A >-> B`
	oz only ▶	`A \tinj B`	`A inj B`
$A \psurj B$		`A \psurj B`	`A +>> B`
	oz only ▶	`A \psur B`	`A psurj B`
$A \twoheadrightarrow B$		`A \surj B`	`A ->> B`
	oz only ▶	`A \tsur B`	`A surj B`
$A \bij B$		`A \bij B`	`A >->> B`
			`A bij B`
$A \ffun B$		`A \ffun B`	`A ++> B`
			`A ffun B`
$A \finj B$		`A \finj B`	`A >++> B`
			`A finj B`

A.2.9 Numbers

		LaTeX	ZSL
$\mathbb{N}$		`\nat`	`N`
			`Nat`
$\mathbb{N}_1$		`\nat_1`	`N1`
	oz only ▶	`\natone`	`Nat1`
$\mathbb{Z}$		`\num`	`Z`
	oz only ▶	`\integer`	`Int`
$n \mathrel{..} m$		`n \upto m`	`n upto m`
			`n .. m`
$x + y$		`x + y`	`x + y`
$x - y$		`x - y`	`x - y`
$x * y$		`x * y`	`x * y`
$x = y$		`x = y`	`x = y`
$x \neq y$		`x \neq y`	`x /= y`
$x \operatorname{div} y$		`x \div y`	`x div y`
$x \bmod y$		`x \mod y`	`x mod y`
$x < y$		`x < y`	`x < y`
$x \leq y$		`x \leq y`	`x <= y`
$x > y$		`x > y`	`x > y`
$x \geq y$		`x \geq y`	`x >= y`
$succ\ x$		`succ x`	`succ x`

$\# S$		`\# S`	`# S`
$min\ S$		`min~S`	`min S`
$max\ S$		`max~S`	`max S`

A.2.10 Sequences

		LaTeX	ZSL
$\mathrm{seq}\ X$		`\seq X`	`seq X`
$\mathrm{seq}_1\ X$		`\seq_1 X`	`seq1 X`
	oz only ▶	`\seqone X`	
$\mathrm{iseq} X$		`\iseq X`	`iseq X`
$\langle s_1, \ldots, s_n \rangle$		`\langle s_1,...,s_n \rangle`	`<< s1,...,sn >>`
	oz only ▶	`\lseq s_1,...,s_n \rseq`	
$s \frown t$		`s \cat t`	`s concat t` `s ^ t`
$head\ s$		`head~s`	`head s`
$last\ s$		`last~s`	`last s`
$tail\ s$		`tail~s`	`tail s`
$front\ s$		`front~s`	`front s`
$rev\ s$		`rev~s`	`rev s`
$s \upharpoonright X$		`s \filter X`	`s filter X`
	oz only ▶	`s \sres X`	`s |- X`
$X \upharpoonleft s$		`X \extract s`	`X extract s`
	oz only ▶	`X \ires s`	`X -| s`
$\frown / ss$		`\dcat ss`	`^/ ss`
disjoint ss		`\disjoint ss`	`disjoint ss`
ss partition S		`ss \partition S`	`ss partition S`
s_1 in s_2		`s_1 \subseq s_2`	`s1 subseq s2`
	oz only ▶	`s_1 \inseq s_2`	
s_1 prefix s_2		`s_1 \prefix s_2`	`s1 prefix s2`
s_1 suffix s_2		`s_1 \suffix s_2`	`s1 suffix s2`
$squash\ s$		`squash~s`	`squash s`

A.2.11 Bags

	LaTeX	ZSL
$\mathrm{bag}\ X$	`\bag X`	`bag X`
$[\![a_1, \ldots, a_n]\!]$	`\lbag a_1,...,a_n \rbag`	`[[ a1,...,an ]]`
$x \sqsubset B$	`x \inbag B`	`x inbag B`
$count\ B$	`count B`	`count B`
$B_1 \sqsubseteq B_2$	`B_1 \subbag B_2`	`B1 subbag B2`
$B_1 \uplus B_2$	`B_1 \bagdiff B_2`	`B1 bagdiff B2`

		`B1 -- B2`
$n \otimes B$	`n \bagscale B`	`n bagscale B`
$B \sharp x$	`B \bagcount x`	`B bagcount x`
$B_1 \uplus B_2$	`B_1 \uplus B_2`	`B1 bagunion B2`
oz only ▶	`B_1 \buni B_2`	`B1 ++ B2`
items s	`items s`	`items s`

A.2.12 Binding

	LaTeX	ZSL
θS	`\theta S`	`theta S`

A.2.13 Selection

	LaTeX	ZSL
$S.x$	`S.x`	`S.x`

A.2.14 Operators

	LaTeX	ZSL
*PreSym_*	`PreSym \_`	`PreSym _`
*_InSym_*	`\_ InSym \_`	`_ InSym _`
_PostSym	`\_ PostSym`	`_ PostSym`
$\_ \limg \_ \rimg$	`\_ \limg \_ \rimg`	`_ (| _ |)`