??
$_{s}urvey_{2}011.Morecomprehensiveintroductionsto Markovcategoriescanbefoundinfritz_{s}ynthetic_{2}020, cho_{d}isintegration_{2}$
$\{*\}$
K
$:=$
$[baseline =$
$([yshift = -.5ex]currentboundingbox.center)](0,0)node[dist](K)++$
$(0.5,0)node(B); (K)-$
$-(B);$
L
$:$
XY
M
$:$
YZ
LM
X
K
M
Z
K
$:$
WY
L
$:$
XZ
$K\otimes$
L
$:$
$W\times$
$XY\times$
Z
$\otimes L :=$
$[baseline =$
$([yshift = -.5ex]currentboundingbox.center)](0,0)node(A)++$
$(0.5,0)node[kernel](K)++$
$(0.5,0)node(B); (0,-0.5)node(C)++$
$(0.5,0)node[kernel](L)++$
$(0.5,0)node(D); (A)-$
$-(K)-$
$-(B); (C)-$
$-(L)-$
$-(D);$
K
$:$
XY
L
$:$
$Y\times$
XZ
K
L
$_{X}(K\otimes$
$id_{X})(Copy_{Y}\otimes$
$id_{X})(id_{Y}\otimes$
$L)$
$=$
$copy_{p}roduct$
X
id^{X}
$:$
$X \to$
$\Delta(X)$
$_{X} :=$
$(0,0)node(X)++$
$(2,0)node(Y); (X)-$
$-(Y);$
$X\times$
Y
$\mathrm{id}^{X}\otimes$
id^{Y}
$X\times$
Y
$\times Y \cong$
$\mathrm{Id}^{X}\otimes$
$\mathrm{Id}^{Y} :=$
$(0,0)node(E)++$
$(1,0)node(F)(0,-0.5)node(F1)+(1,0)node(G); (E)-$
$-(F); (F1)-$
$-(G);$
$X\times$
Y
$X\times$
Y
L
$:$
$X \to$
$\Delta(\mathcal{Y}\otimes$
$\mathcal{Z})$
X
L
Y
Z
$(L.east)+$
$(0,0.15)$
$(L.east)+$
$(0,-0.15)$
$=$
$(0,0)node(E)++$
$(1,0)node[kernel](L)++$
$(1.5,0)node(F)\times Z$