

## Drawing fusion machines

This latex file shows how to draw fusion machines and channel machines. For example, a heating rule:

$$\begin{array}{c} u \\ \hline v \\ \hline \text{mx}.\phi \\ A \\ \hline D \end{array} \quad \begin{array}{c} v \\ \hline F' \\ \hline A' \\ \hline D' \end{array} \quad \rightarrow \quad \begin{array}{c} u \\ \hline v \\ \hline A \\ \hline D \end{array} \quad \begin{array}{c} v \\ \hline F' \\ \hline \text{mx}.\phi \\ A' \\ \hline D' \end{array} \quad (\text{migrate})$$

A reaction:

$$\begin{array}{c} u \\ \hline F \\ \hline \text{out}x.\phi \\ \text{in}y.\psi; A \\ \hline D \end{array} \quad \rightarrow \quad \begin{array}{c} u \\ \hline F \\ \hline A \\ \hline x=y; \phi; \psi, D \end{array}$$

A fat channel machine:

$$\begin{array}{c} u \\ \hline \hline A_1 \\ A_2 \\ \hline \text{a fat program} \end{array}$$

The basic commands are

`\fad{u}{F}{A}{D}` - a fusion machine  
`\cad{u}{A}{D}` - a channel machine  
`\fad, \qfad, \qqfad` - in increasing order of width  
`\qqqfad, \qxfad`  
`\fad{u}{-}{A_1 \ \ A_2}{D}` - for multi-line contents

This is the code used to generate the example pictures:

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\begin{equation}
\qfad{u}{v}{\atom x.\phi \ \ A}{D}\quad
\qfad{v}{\pd F'}{\pd A'}{\pd D'}
\quad\heat\quad
\qfad{u}{v}{A}{D}\quad
\qfad{v}{\pd F'}{\atom x.\phi \ \ \pd A'}{\pd D'}
\tag{migrate}
\end{equation}

\begin{equation*}
\qqfad{u}{F}{\aout x.\phi \ \ \ain y.\psi;\,A}{D}
\quad\red\quad
\qqfad{u}{F}{A}{x\fu y; \phi; \psi, D}
\end{equation*}

\begin{equation*}
\qxcad{u}{A_1 \ \ A_2}{\text{a fat program}}
\end{equation*}

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