MetaPost v2.000

BachoTEX 2014

May 3, Bachotek
The MP2 Project

- funded by TEX user groups
- first stage started in 2009
  - MPLib reentrant library
  - dynamic memory allocation
  - removal of memory dump files
  - switch to CWEB from Pascal WEB
  - end result: MP 1.500
- second stage started in 2011
  - different calculus engines
  - end result: MP 2.000
  - (PNG backend)
Calculus engines
Implementation speed

• for double: 4 months
• for decimal: 4 weeks
• for binary: 4 days
What it does

- Test version released (version 1.999)
- All four engines!
- Selection of engine happens on the commandline:
  - `mpost --numbersystem=scaled mpman`
  - `mpost --numbersystem=double mpman`
  - `mpost --numbersystem=binary mpman`
  - `mpost --numbersystem=decimal mpman`
- Numerical range depends on the `numbersystem` in use
- So does the range for `numberprecision`
Setting the precision

The number precision internal allows the following ranges for assigning the number of relevant (decimal) digits:

<table>
<thead>
<tr>
<th>Number System</th>
<th>Value</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scaled</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Double</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Binary</td>
<td>1</td>
<td>1000</td>
<td>1000</td>
<td>34</td>
</tr>
<tr>
<td>Decimal</td>
<td>1</td>
<td>1000</td>
<td>1000</td>
<td>34</td>
</tr>
</tbody>
</table>

Higher settings will slow down processing, sometimes a lot.
Actual input (using \texttt{decimal})
What it does not do

• some internals like intersection times do not take advantage of the extra precision
• not all bugs in Metapost 1.803 are fixed
What about TeXLive 2014?

• TeXLive 2014 will have Metapost 1.902, which is identical to 1.999, except that there is no binary mode:
  − more testing is required in binary mode
  − the MPFR library needs proper integration in the build process
MetaPost Support
About the future
and that’s all ...