APPENDIX B

MTV Annotations

1 ANNOTATIONS

1.1 Overview

The MTV data format allows plot annotations to be attached to sets of data. Annotations are specified in the data-file or data-stream as strings beginning with the "@" character. Multiple annotations can be attached in each dataset. Furthermore, each annotation can be specified in data (world) coordinates or in plot coordinates.

The format for annotations is as follows:

MTV Annotation Types

First Character	Keyword	Arguments	
@	rectangle	x1=<> y1=<> [z1=<>] x2=<> y2=<> [z2=<>]	<annotation-properties>
@	line	x1=<> y1=<> [z1=<>] x2=<> y2=<> [z2=<>]	<annotation-properties>
@	arrow	x1=<> y1=<> [z1=<>] x2=<> y2=<> [z2=<>]	<annotation-properties>
@	point	x1=<> y1=<> [z1=<>]	<annotation-properties>
@	text	x1=<> y1=<> [z1=<>] label=<>	<annotation-properties>

Annotation Property Argument List				
Name	**Type**	**Default**	**Range**	**Description**
Line Options				
linelabel label ll	string	NULL	N/A	Curve label
linewidth lw	integer	1	0 — 32	Curve width
linetype lt	integer	1	0 — 10	Curve type 0=None 1=Solid 2=Dashed 3=Dotted 4=Dot-Dash 5=Long-Dots 6=Double-Dot 7=Long-Dash 8=Sparse Dot-Dash 9=Triple-Dot 10=Dot-Dot-Dash
linecolor lc	integer	1	-1 — 10	Line color -1=Background color[a] 0=Foreground color[b] 1=Yellow 2=Blue 3=Green 4=Red 5=Dark Blue 6=Orange 7=Pink 8=Light Pink 9=Cyan 10=Brown

Annotation Property Argument List				
Name	**Type**	**Default**	**Range**	**Description**
Marker Options				
markertype mt	integer	0	0 — 13	Marker type 0=None 1=Dot 2=Cross 3=X 4=White Square 5=Black Square 6=White Diamond 7=Black Diamond 8=White Triangle 9=Black Triangle 10=White Inverted Triangle 11=Black Inverted Triangle 12=White Circle 13=Black Circle
markercolor mt	integer	1	-1 — 10	Marker color Refer to linecolors
markersize ms	integer	1	1 — 10	Marker size
Fill Options				
filltype ft	integer	0	0 — 8	Fill type 0=None 1=Solid 2=Square Crosshatch 3=Left-to-right Diagonal 4=Right-to-left Diagonal 5=Crossed Diagonals 6=Vertical Lines 7=Horizontal Lines 8=Dotted Horizontal Lines
fillcolor fc	integer	1	-1 — 10	Fill color Refer to linecolors
Miscellaneous Options				
absolute	Boolean	False	T/F	Plot in world/plot coordinates

Annotation Property Argument List				
Name	**Type**	**Default**	**Range**	**Description**
Miscellaneous Options (continued)				
clip	Boolean	True	T/F	Clip against plot boundary

a. The background color is typically blue on an X11 plot. On a Postscript plot, the background color is always white.
b. The foreground color is typically white on an X11 plot. On a Postscript plot, the foreground color is always black.

1.2 Resource Specification

Lines

linelabel

label

ll Specifies a label (legend) to be placed to the left of the plot. For contour-curves, the label is placed at various locations on the curve itself. Default is a blank string.

linewidth

lw Specifies the width of the line to be used in drawing the curve. Default is 1.

linetype

lt Specifies the type of line-pattern to be used in drawing the curve. Line-patterns include solid lines, dashed lines and dotted lines. Default is 1 (solid line).

linecolor

lc Specifies the color to be used in drawing the curve. Colors are approximated by gray-scales for black-and-white Postscript plots. Default is 1 (yellow).

Markers

markertype

mt Specifies the markertype to be used in drawing the points on the curve. The default value is 0, in which case markers are not plotted.

markercolor

mc Specifies the color to be used in drawing the markers. Colors are approximated by gray-scales for black-and-white Postscript plots. Default is 1 (yellow).

markersize

ms Specifies the size of markers on the curve. The default value is 1, which is the smallest size.

Fills

filltype

ft Specifies the filltype to be used in drawing the curve. The default is 0, in which case only the outline of the curve is drawn.
Note: The **filltype** is ignored if the Dataset Resource **applyfill** is **False**.

fillcolor

fc Specifies the color to be used in the fill-pattern. Colors are approximated by gray-scales for black-and-white Postscript plots. Default is 1 (yellow).

Miscellaneous

absolute Specifies if the position of the annotation is specified in world coordinates or in plot coordinates. Defaults to **False**, in which case world coordinates are assumed. If **absolute=True**, then the annotations are specified by their position on a page - the coordinates must be given such that `0<x<1` and `0<y<1`; the actual position of the annotation is obtained from `x` × `width`, `y` × `height`, where `width` and `height` are the dimensions of the page/plot. This latter scheme however has the disadvantage that the position of an annotation in an X11 plot is slightly different from that on a Postscript plot.

clip Specifies if the annotation is to be clipped against the plot boundaries. Defaults to **True**, in which case, the annotation is not drawn if the point(s) to which it is attached fall outside the plot boundaries.

1.3 Example

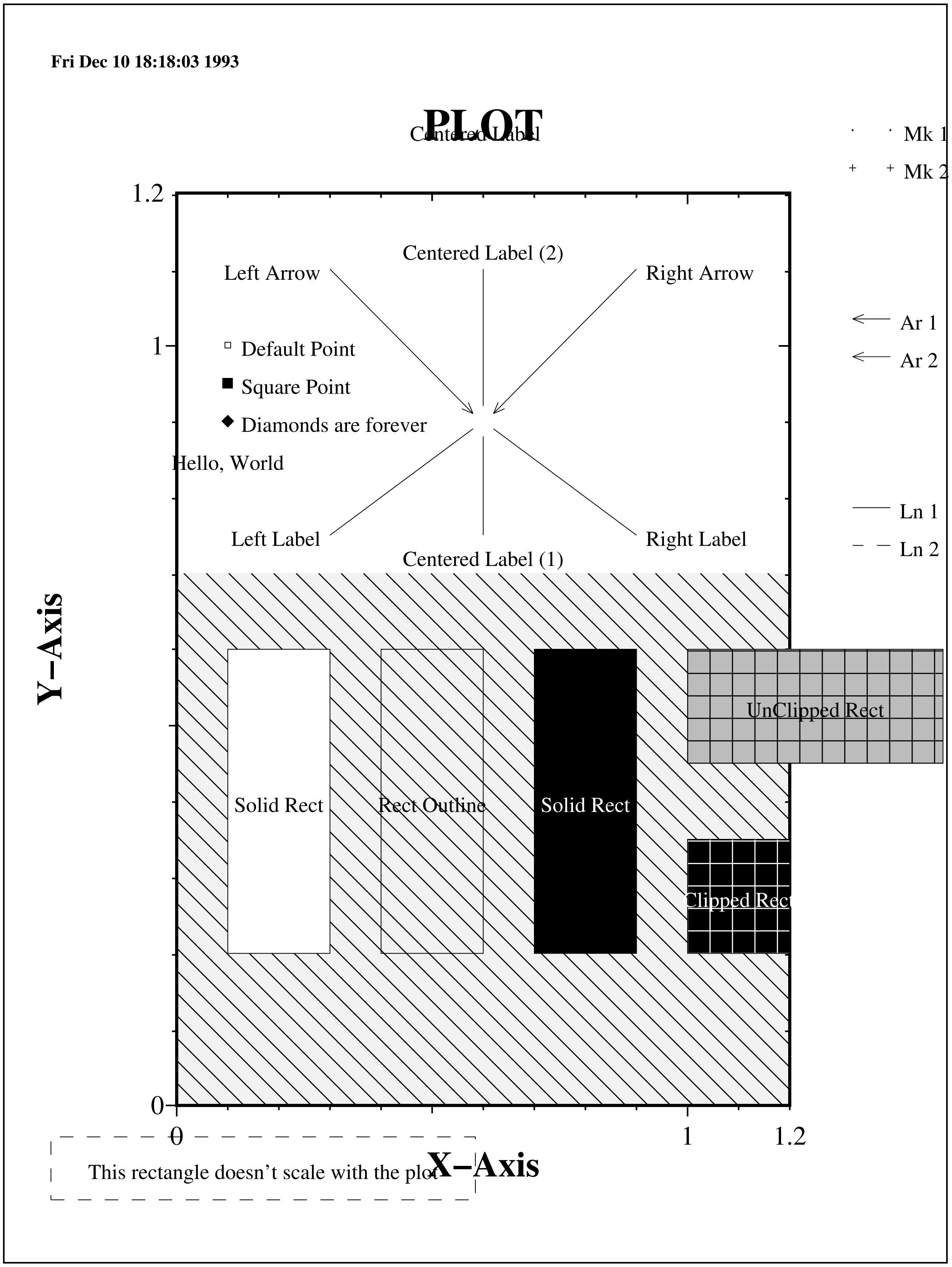
The following shows an example file containing a CURVE2D dataset containing one curve and several annotations. The resultant plot is shown on the following page,.

```
$ DATA=CURVE2D

# This data-file illustrates the use of annotations

% vymax=1.2

# Define fake data
% linetype=0 filltype=4
0.0 0.0
1.2 0.0
1.2 0.7
0.0 0.7
0.0 0.0

# define annotations
#
# By default, annotations are defined in data coordinates
#
# Annotations can also be specified by their position on a page (plot)
# in which case the coordinates are given such that 0<x<1 and 0<y<1;
# the actual position of the annotation is obtained from x*width,y*height
# This scheme however has the disadvantage that the position of an
# annotation in an X plot is slightly different from that on a Postscript
# plot.
#

#
# Rectangle annotations
#
# syntax:
#   @ rectangle P1 P2 [properties]
#
#   P1=lower left corner
#   P2=upper right corner
#   The linelabel is placed at the center of the rectangle
#

# rectangle with background color (white in Postscript) and solid fill
@ rectangle x1=0.1 y1=0.2 z1=0.0 x2=0.3 y2=0.6 z2=0.0 \
fillcolor=-1 filltype=1 linelabel="Solid Rect"

# rectangle with no fill (outline) - this is the default
@ rectangle x1=0.4 y1=0.2 z1=0.0 x2=0.6 y2=0.6 z2=0.0 \
fillcolor=0 filltype=0 linelabel="Rect Outline"

# rectangle with foreground color (black in Postscript) and solid fill
@ rectangle x1=0.7 y1=0.2 z1=0.0 x2=0.9 y2=0.6 z2=0.0 \
fillcolor=0 filltype=1 linelabel="Solid Rect"
```

```
# rectangle with striped fill, extends outside data-boundaries (default clip)
@ rectangle x1=1.0 y1=0.2 z1=0.0 x2=1.5 y2=0.35 z2=0.0 \
filltype=2 linelabel="Clipped Rect"

# rectangle with striped fill, extends outside data-boundaries (no clip)
@ rectangle x1=1.0 y1=0.45 z1=0.0 x2=1.5 y2=0.6 z2=0.0 \
fillcolor=2 filltype=2 linelabel="UnClipped Rect" doclip=false

# Plot this rectangle in absolute coordinates (x=0..1, y=0..1)
@ rectangle x1=0.05 y1=0.05 x2=0.50 y2=0.1 linetype=2 absolute=true \
linelabel="This rectangle doesn't scale with the plot"

#
# Line annotations
#
# syntax:
#   @ line P1 P2 [properties]
#
#              P1----------------P2
#            label
#
#   P1=starting point
#   P2=ending point
#   The linelabel is placed at the starting-point (P1)
#   and left-justified if P1.x > P2.x, and right-justified if P1.x < P2.x,
#   and center-justified if P1.x = P2.x
#

# default line
@ line      x1=0.90 y1=0.75 z1=0.0 x2=0.62 y2=0.89 z2=0.0 \
linelabel="Right Label"

# Label centered at P2
@ line      x1=0.60 y1=0.75 z1=0.0 x2=0.60 y2=0.88 z2=0.0 \
linelabel="Centered Label (1)"

# Label centered at P2
@ line      x1=0.60 y1=1.10 z1=0.0 x2=0.60 y2=0.92 z2=0.0 \
linelabel="Centered Label (2)"

# Label to the left of the line
@ line      x1=0.30 y1=0.75 z1=0.0 x2=0.58 y2=0.89 z2=0.0 \
linelabel="Left Label"

# Labels at right corner of plot
@ line      x2=0.90 y2=0.60 x1=0.94 y1=0.60 \
linetype=1 absolute=True linelabel="Ln 1"
@ line      x2=0.90 y2=0.57 x1=0.94 y1=0.57 \
linetype=2 absolute=True linelabel="Ln 2"
```

```
#
# Arrow annotations
#
# syntax:
#   @ arrow P1 P2 [properties]
#
#               P1--------------->P2
#             label
#
#   P1=starting point
#   P2=ending point
#   The linelabel is placed at the starting-point (P1)
#   and left-justified if P1.x > P2.x, and right-justified if P1.x < P2.x,
#   and center-justified if P1.x = P2.x
#

# default line
@ arrow     x1=0.90 y1=1.10 z1=0.0 x2=0.62 y2=0.91 z2=0.0 \
linelabel="Right Arrow"

# Label to the left of the line
@ arrow     x1=0.30 y1=1.10 z1=0.0 x2=0.58 y2=0.91 z2=0.0 \
linelabel="Left Arrow"

# Labels at right corner of plot
@ arrow     x2=0.90 y2=0.75 x1=0.94 y1=0.75 \
linetype=1 linecolor=1 absolute=True linelabel="Ar 1"
@ arrow     x2=0.90 y2=0.72 x1=0.94 y1=0.72 \
linetype=1 linecolor=2 absolute=True linelabel="Ar 2"

#
# Marker(point) annotations
#
# syntax:
#   @ point P1 [properties]
#
#   P1=coordinates
#   The linelabel is left-justified and on the right of P1
#

# single point
@ point     x1=0.1 y1=1.00 z1=0.0 linelabel="Default Point"

# another point
@ point    x1=0.1 y1=0.95 z1=0.0 markertype=5 markersize=3 linelabel="Square
Point"

# another point
@ point     x1=0.1 y1=0.90 z1=0.0 markertype=7 markersize=3 linelabel="Dia-
monds are forever"

# Set of points at the left side of the plot
@ point     x1=0.90 y1=0.90 markertype=1 absolute=True
@ point     x1=0.94 y1=0.90 markertype=1 absolute=True linelabel="Mk 1"
@ point     x1=0.90 y1=0.87 markertype=2 absolute=True
@ point     x1=0.94 y1=0.87 markertype=2 absolute=True linelabel="Mk 2"
```

```
#
# Text (label) annotations
#
# syntax:
#   @ text P1 [properties]
#
#   P1=coordinates of center of label
#   The linelabel is centered around P1
#

# label
@ text      x1=0.1 y1=0.85 z1=0.0 linelabel="Hello, World"

# label in absolute coordinates
@ text      x1=0.5 y1=0.9 z1=0.0 linelabel="Centered Label" absolute=True

$END
```


Fri Dec 10 18:18:03 1993
PLOT
Centered Label
Mk 1
Mk 2
Ar 1
Ar 2
Ln 1
Ln 2
1.2
1
0
Left Arrow
Centered Label (2)
Right Arrow
Default Point
Square Point
Diamonds are forever
Hello, World
Left Label
Centered Label (1)
Right Label
Y−Axis
Solid Rect
Rect Outline
Solid Rect
UnClipped Rect
Clipped Rect
0
1
1.2
X−Axis
This rectangle doesn't scale with the plot