HowTo make high resolution figures

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Abstract

A hint on how to produce a high resolution plot for input to, for example, WinWord.

Contents

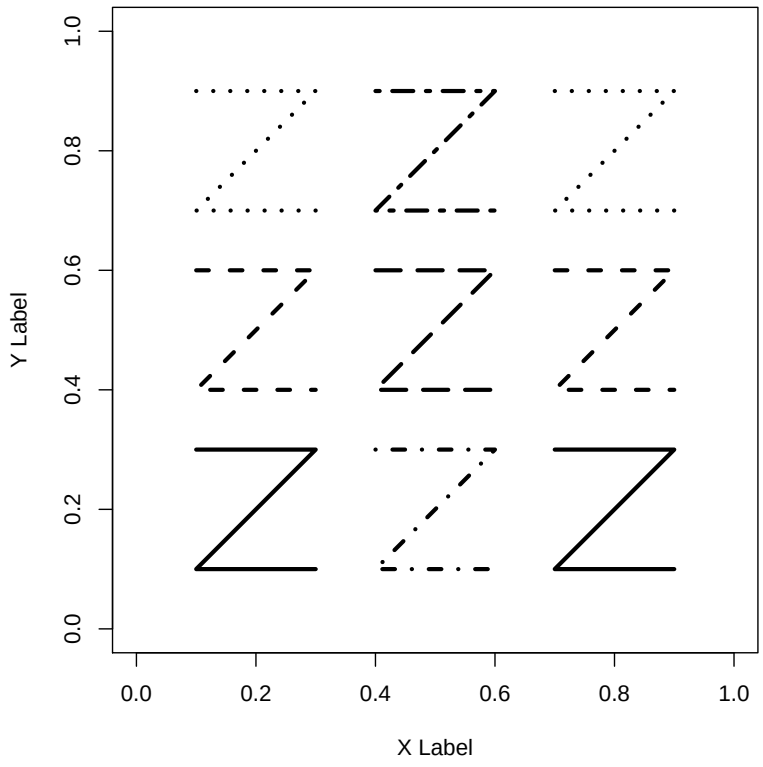
1 Plotting to high resolution WMF file

Windows metafile (.wmf) tends to be in low resolution which result in ragged lines:

```
> plotZ <- function() {
+     par(mar = c(5, 5, 1, 1))
+     plot(0:1, 0:1, type = "n", xlab = "X Label", ylab = "Y Label",
+         cex = 1.5)
+     for (i in 1:9) {
+         x <- c(1, 1, 1, 4, 4, 4, 7, 7, 7)[i]/10
+         y <- c(3, 6, 9, 3, 6, 9, 3, 6, 9)[i]/10
+         lines(c(x, x + 0.2, x, x + 0.2), c(y, y, y -
+             0.2, y - 0.2), lty = i, lwd = 3)
+     }
+ }


> win.metafile(file = "../doc/lineplot1.wmf", width = 10,
+     height = 7.5)
> plotZ()
> dev.off()
null device
          1


> plotZ()
```

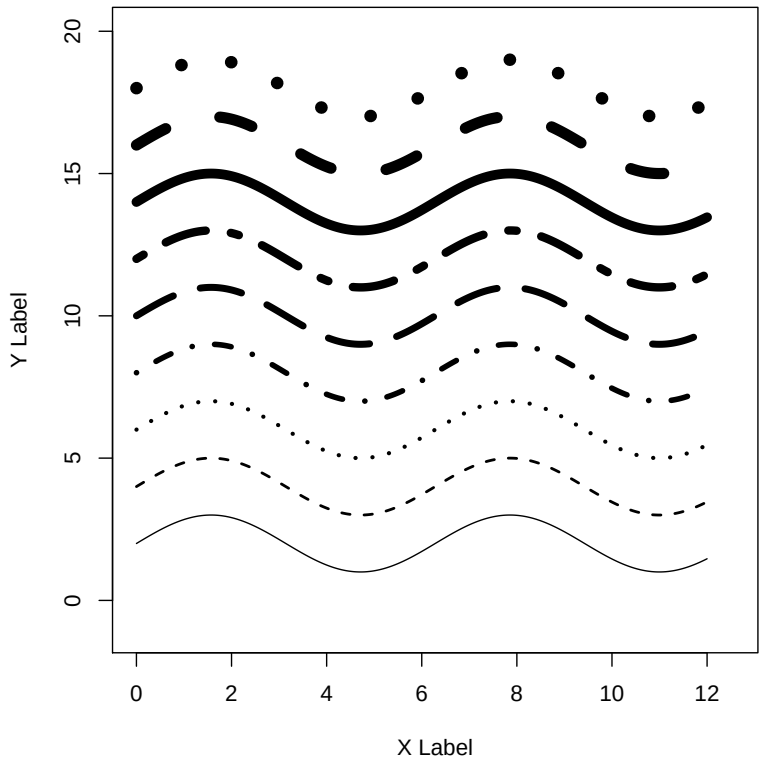


2 Waves

```
> plotSin <- function() {
+     par(mar = c(5, 5, 1, 1))
+     plot(c(0, 4 * pi), c(-1, 20), type = "n", xlab = "X Label",
+         ylab = "Y Label", cex = 1.5)
+     for (i in 1:9) {
+         x <- seq(0, 12, 0.01)
+         y <- sin(x)
+         lines(x, y + i * 2, lty = i, lwd = i)
+     }
+ }


> win.metafile(file = "../doc/lineplot2.wmf", width = 5 *
+     10, height = 5 * 7.5, pointsize = 5 * 12)
> plotSin()
> dev.off()
pdf
  2


> plotSin()
```



3 ImageMagick

ImageMagick might be a solution, since it can convert among many picture formats. Unfortunately it ca only read .WMF and not also write them.

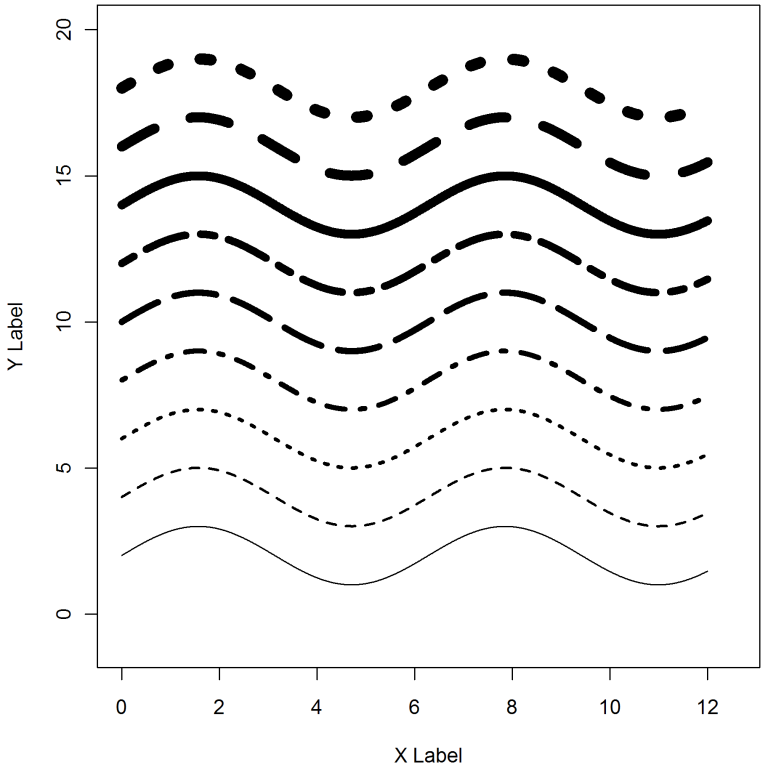
4 PNG

Portable Network Graphics (.PNG) is a promising option. I tried to make a large plot, which is shrinked to appropriate size on input to Word.

```
> s <- 4
> png(file = "../doc/lineplot2.png", width = 480 * s, height = 480 *
+     s, res = 72 * s)
> plotSin()
> dev.off()
```

```
pdf
  2
```

Figure in .png format can be included in the document:
`\includegraphics{../doc/lineplot2.png}`



Arguments `width`, `height`, and `res` control the smoothness and should be large enough but in reasonable ratio. In teh example above, `s` is a smoothness parameter, value 4 is the largest and good enough.

The picture size with $s = 4$ will be 1920×1920 and resolution 288dpi. The more common resolution that would fit this picture size is 300dpi.

Larger `res` or `pointsize` makes larger margins and axis labels, which could be helpful in some cases.

SessionInfo

Windows XP (build 2600) Service Pack 3

- R version 2.8.0 (2008-10-20), `i386-pc-mingw32`
- Locale: `LC_COLLATE=Slovenian_Slovenia.1250;LC_CTYPE=Slovenian_Slovenia.1250;LC_MON`
- Base packages: base, datasets, graphics, grDevices, methods, stats, utils
- Other packages: Hmisc 3.4-3
- Loaded via a namespace (and not attached): cluster 1.11.11, grid 2.8.0, lattice 0.17-15

View as vignette

Project files can be viewed by this code:

```
> projectName <- "HowTo"
> mainFile <- "HowToWMF"
> library(tkWidgets)
> getRootPath <- function() {
+     fp <- (strsplit(getwd(), "/"))[[1]]
+     file <- file.path(paste(fp[-length(fp)], collapse = "/"))
+     return(file)
+ }
> fileName <- function(name = "bla", ext = "PDF") paste(name,
+     ext, sep = ".")
> openPDF(file.path(getRootPath(), "doc", fileName(mainFile,
+     "PDF")))
> viewVignette("viewVignette", projectName, file.path("../doc",
+     fileName(mainFile, "RNW")))
```