

# The FigSize Package

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## Abstract

The FigSize package enables automatic sizing of graphics, especially when including graphics with the graphicx package. The user only has to specify the number of graphics that should fit to a page or fraction thereof and the package will dynamically calculate the correct graphics sizes relative to the page size. Thus, graphics can be auto-sized to fill a whole page or fraction and manual changes of graphic sizes are never needed when changing document layouts! Finally, the package's dynamic lengths can be used to allow other document element sizes to be dynamic.

## 1 Usage

Perhaps the best way to see how this package works is to skip to the examples section. However, below is a more general explanation of the package and its use.

Loading the package:

```
\loadpackage{figsize}
```

Next, to allow the FigSize package to dynamically define widths and heights for the graphic simply specify the desired layout using,

```
\SetFigLayout[<extra space for long captions>]{<rows>}{<columns>}.
```

Where you specify the number of rows and columns of graphics that should fit to a page. Optionally, if you have a long caption you can tell the package how many extra lines of text that should be allowed for on the page as well.

Then, just include the graphic using the command from the `graphicx` package (which is just the advanced version of the `graphics` package),

```
\includegraphics{filename}1
```

Thus, if one issues the command `\SetFigLayout{2}{1}` the algorithm knows that any graphics inserted after this point with the command `\includegraphics{...}` should be sized so that two high by one wide will fit on a page.

When `\SetFigLayout{}{}` is issued the package redefines two new page relative lengths `\figwidth` and `\figheight`. Then, `\includegraphics{...}` is redefined to by default have optional parameters set to `[width=\figwidth, totalheight=\figheight, keepaspectratio]`.

By default, this package makes the assumption that figures should be resized while keeping their aspect ratio. This may not be the desired effect, to remove this effect insert figures using,

```
\includegraphics[width=\figwidth, totalheight=\figheight]{...}
```

Further, one can utilize all the optional facilities provided by the `\includegraphics{...}` command, simply use the format,

```
\includegraphics[width=\figwidth, totalheight=\figheight, <more options>]{...}
```

Moreover, one can use the new dynamic widths `\figwidth` and `\figheight` for other types of environments like tables, pictures, and so on.

## 2 Package Requirements

When the `FigSize` package is loaded it loads the `subfigure`, `graphicx`, `ifthen`, and `calc` packages. These packages must already exist on the  $\text{\LaTeX}$  system for the `FigSize` package to work properly.

## 3 Examples

The best way to see how this package works is through examples. The next few examples illustrate common uses for the `FigSize` package.

The following code sets the size of the graphics so that 4 rows by 3 columns of them fit to a page. The result is shown in Figure 1 and 2.

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<sup>1</sup>For a detailed explanation on how to use the `graphics` package and the `\includegraphics` command see the guide to using `graphics` with  $\text{\LaTeX}$ . Found online at <http://www.ctan.org/tex-archive/help/Catalogue/entries/grfguide.html?>

```

\begin{figure}
\SetFigLayout{3}{3}
  \subfigure[A subfigure.]{\includegraphics{epsfig}}
  \hfill
  \subfigure[A subfigure.]{\includegraphics{epsfig}}
  \hfill
  \subfigure[A subfigure.]{\includegraphics{epsfig}} \\\
  \subfigure[A subfigure.]{\includegraphics{epsfig}}
  \hfill
  \subfigure[A subfigure.]{\includegraphics{epsfig}}
  \hfill
  \subfigure[A subfigure.]{\includegraphics{epsfig}} \\\
  \subfigure[A subfigure.]{\includegraphics{epsfig}}
  \hfill
  \subfigure[A subfigure.]{\includegraphics{epsfig}}
  \hfill
  \subfigure[A subfigure.]{
\includegraphics[angle=45, width=\figwidth,
totalheight=\figheight, keepaspectratio]{epsfig}}

  \caption{This is where your caption text goes. No
optional parameters.}\label{fig:1}
\end{figure}

```

```

\begin{figure}
\SetFigLayout{3}{3}
  \subfigure[A subfigure.]{
\includegraphics[width=\figwidth, totalheight=\figheight]{epsfig}}
  \hfill
  \subfigure[A subfigure.]{
\includegraphics[width=\figwidth, totalheight=\figheight]{epsfig}}
  \hfill
  \subfigure[A subfigure.]{
\includegraphics[width=\figwidth, totalheight=\figheight]{epsfig}} \\\
  \subfigure[A subfigure.]{
\includegraphics[width=\figwidth, totalheight=\figheight]{epsfig}}
  \hfill
  \subfigure[A subfigure.]{
\includegraphics[width=\figwidth, totalheight=\figheight]{epsfig}}
  \hfill
  \subfigure[A subfigure.]{
\includegraphics[width=\figwidth, totalheight=\figheight]{epsfig}} \\\
  \subfigure[A subfigure.]{
\includegraphics[width=\figwidth, totalheight=\figheight]{epsfig}}
  \hfill
  \subfigure[A subfigure.]{

```

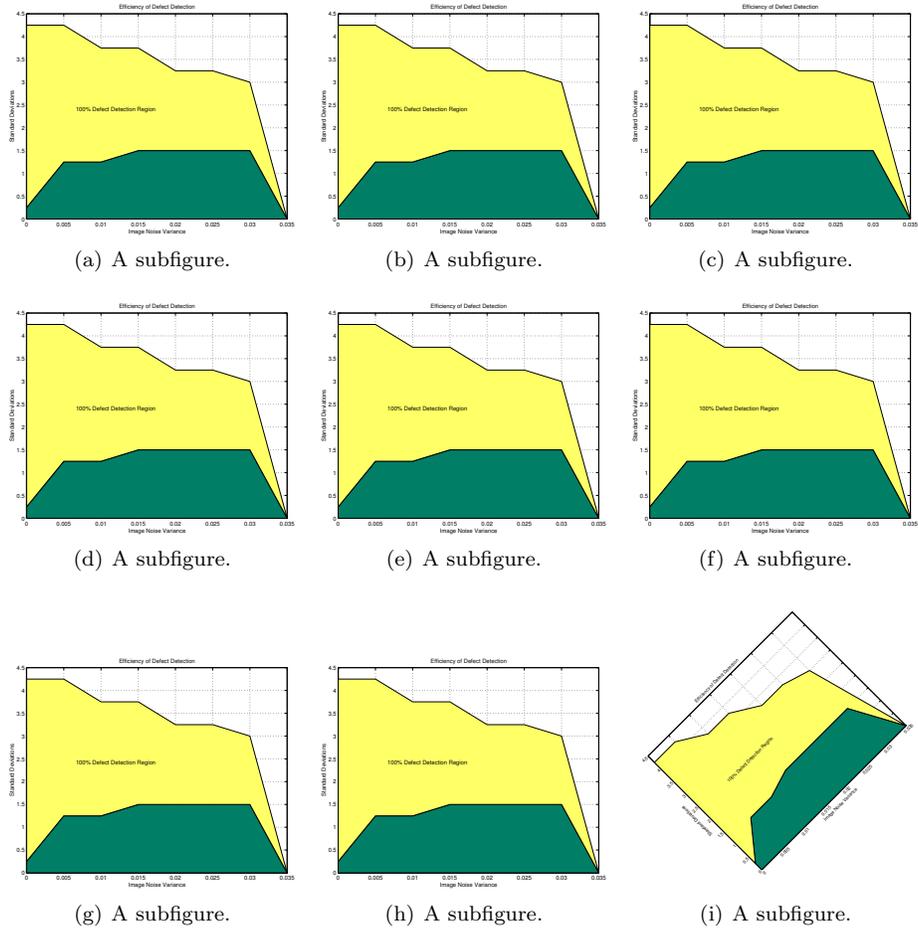


Figure 1: This is where your caption text goes. No optional parameters.

```

\includegraphics[width=\figwidth, totalheight=\figheight]{epsfig}
\hfill
\subfigure[A subfigure.]{
\includegraphics[angle=45, width=\figwidth,
totalheight=\figheight]{epsfig}}

\caption{This is where your caption text goes.
Optional parameters causing the aspect ratio to be
disregarded.}\label{fig:1b}
\end{figure}

```

The following code produces a graphic occupying the whole page (maximally).

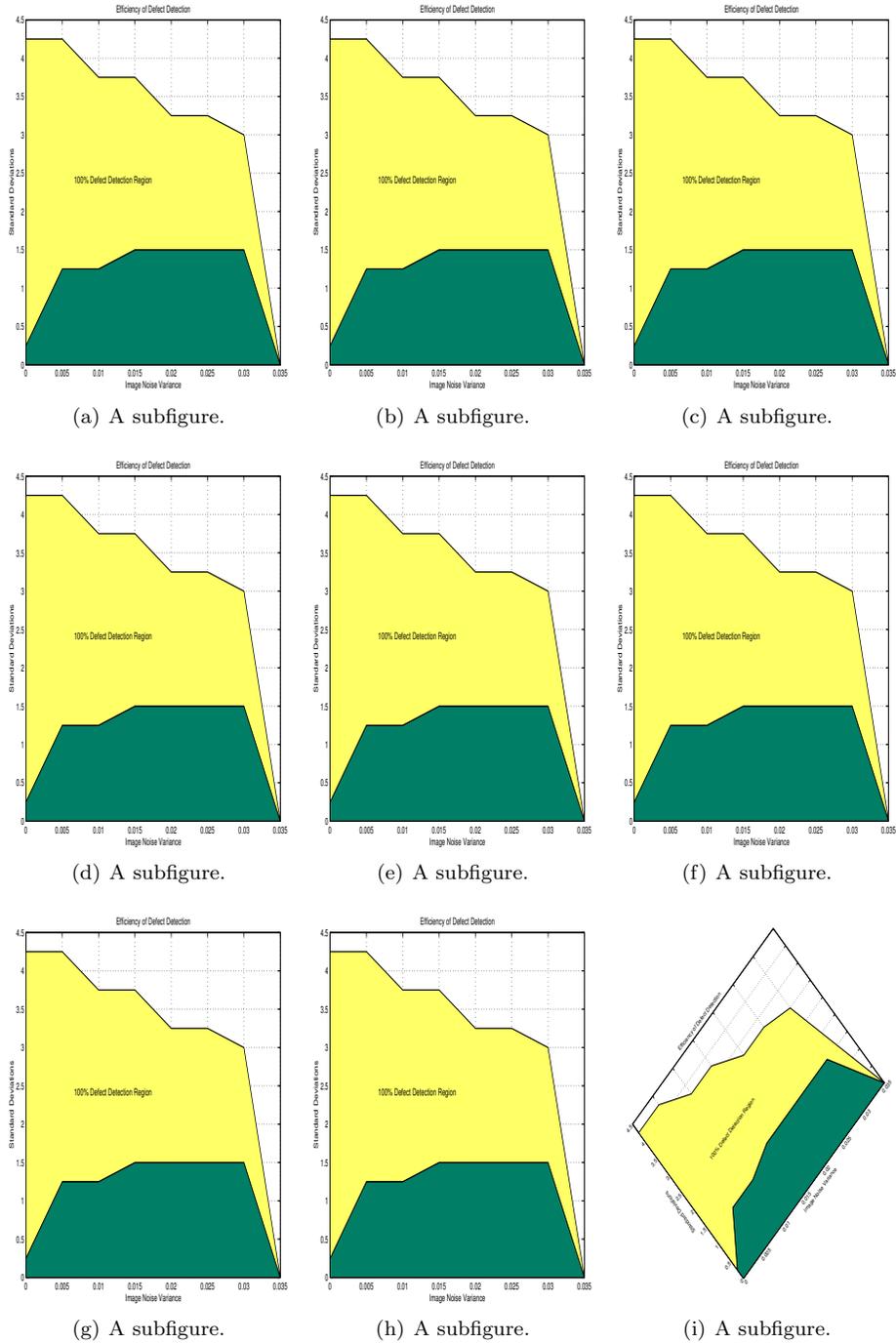


Figure 2: This is where your caption text goes. Optional parameters causing the aspect ratio to be disregarded.

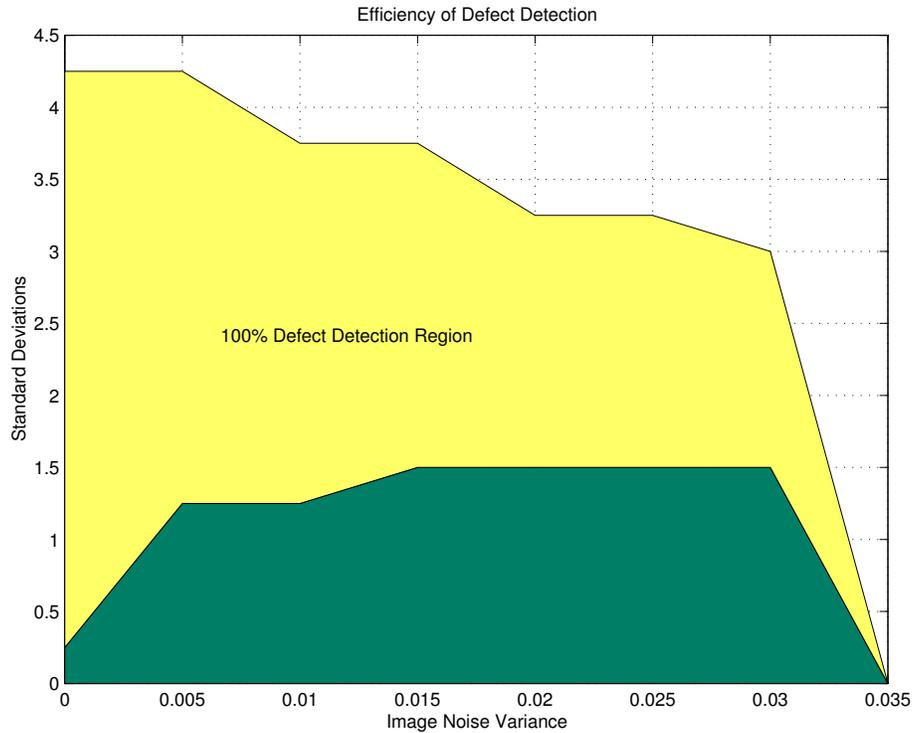


Figure 3: A graphic meant to occupy a whole page. Note that the aspect ratio is respected so the graphic can only occupy the whole text width.

The result is shown in Figures 3 and 4.

```

\begin{figure}
  \SetFigLayout{1}{1}
  {\includegraphics{epsfig}}
  \caption{A graphic meant to occupy a whole page. Note
    that the aspect ratio is respected so the graphic
    can only occupy the whole text width.}
\end{figure}

```

```

\begin{figure}
  \SetFigLayout{1}{1}
  {\includegraphics[%
width=\figwidth, totalheight=\figheight]{epsfig}}
  \caption{Now the graphic occupies the whole page because
we manually specified the parameters to the

```

```

    include graphics command which omitted keepaspectratio.}
\end{figure}

```

The next figure is sized such that only two graphics occupy at most half of the page, allowing for document text to flow onto the rest of the page. The result is shown in Figure 5.

```

\begin{figure}
  \centering
  \SetFigLayout [3]{2}{2}
  \subfigure[]{\includegraphics{epsfig}} \hfill
  \subfigure[]{\includegraphics{epsfig}}
\end{figure}

```

The following code is an example of including a full size graphic with a long caption. The option 5 tells the algorithm to leave space for 5 extra lines of caption text. Without providing telling the algorithm that the caption is expected to take at most 5 extra lines than the one allowed an over full box would occur on the page.

```

\begin{figure}
  \SetFigLayout [5]{1}{1}
  {\includegraphics[%
width=\figwidth, totalheight=\figheight]{epsfig}}
  \caption{This is where your caption text goes.
This is where your caption text goes.}
\end{figure}

```

Figure 7 shows how you can mix and match the sizes relative graphic sizes.

```

\begin{figure}
  \centering
  \SetFigLayout [3]{2}{2}
  \subfigure[]{\includegraphics{epsfig}} \hfill

```

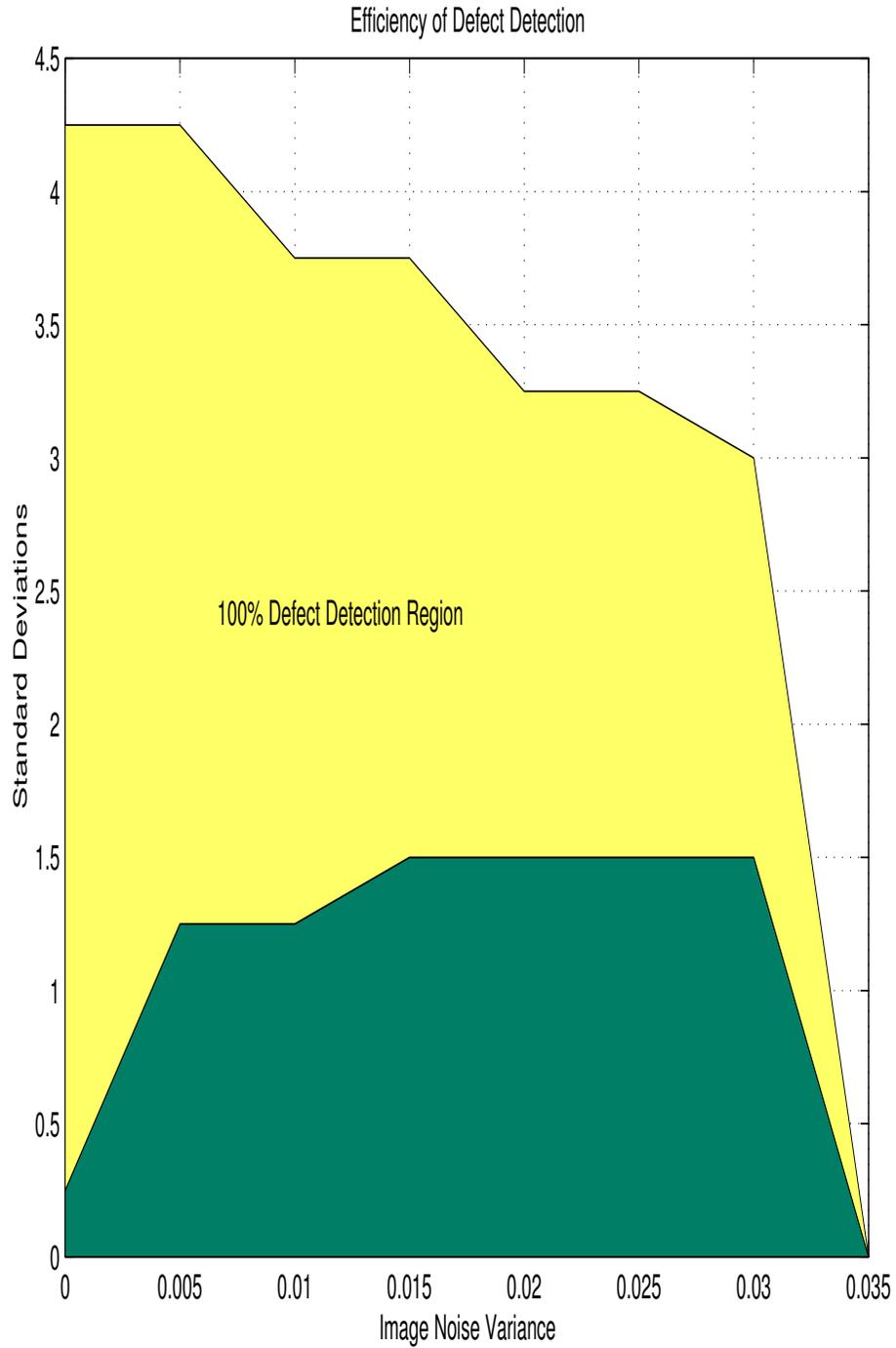


Figure 4: Now the graphic occupies the whole page because we manually specified the parameters to the include graphics command which omitted keepaspectratio.

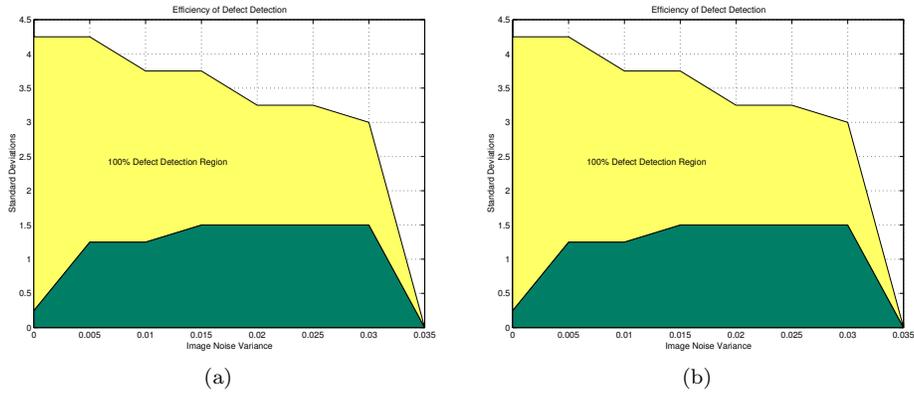


Figure 5: This is where your caption text goes.

```

\subfigure[]{\includegraphics{epsfig}}
%Now change the size mid way
\SetFigLayout[3]{2}{1}
\subfigure[]{\includegraphics{epsfig}}
\caption{This is where your caption text goes.}
\end{figure}

```

Finally, we can utilize the `\figwidth` and `\figheight` commands for other environments like tables as shown in Table 1. The code that produced the tables was,

```

\begin{table}
\caption{Two tables that are half page width}\label{tab:1}
\SetFigLayout{1}{2}
\begin{tabular*}{\figwidth}{ccc}
\hline
A & B & C \\ \hline
555 & 111 & 333 \\ \hline
\end{tabular*}
\hfill
\begin{tabular*}{\figwidth}{ccc}
\hline
A & B & C \\ \hline

```

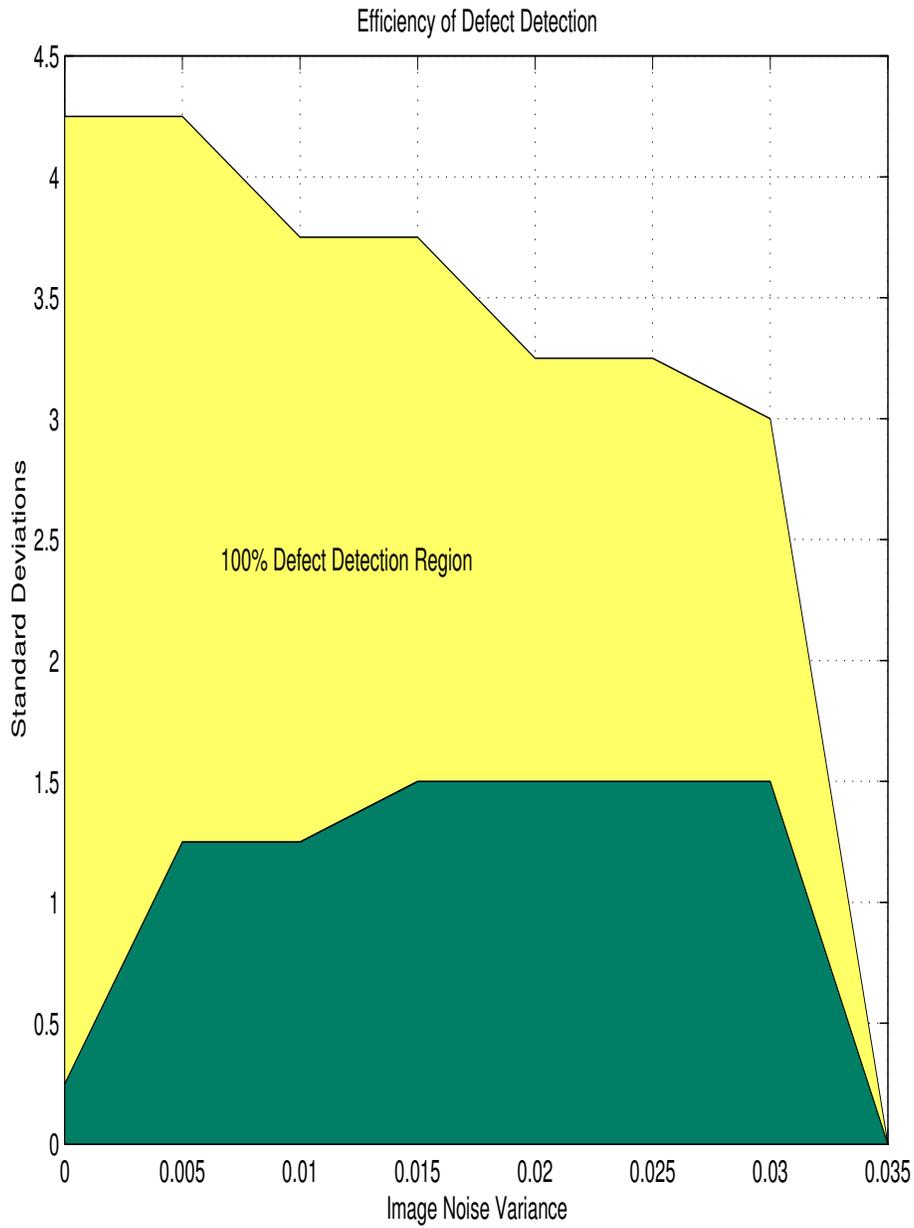
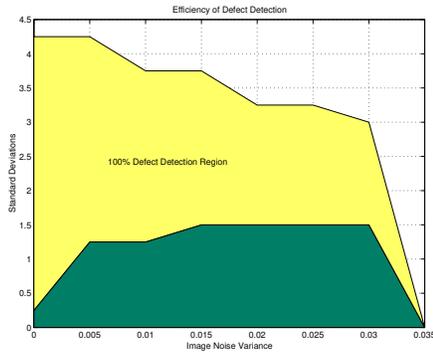
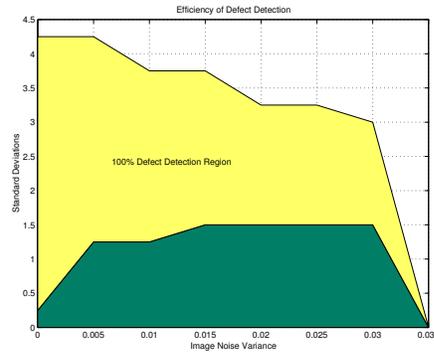


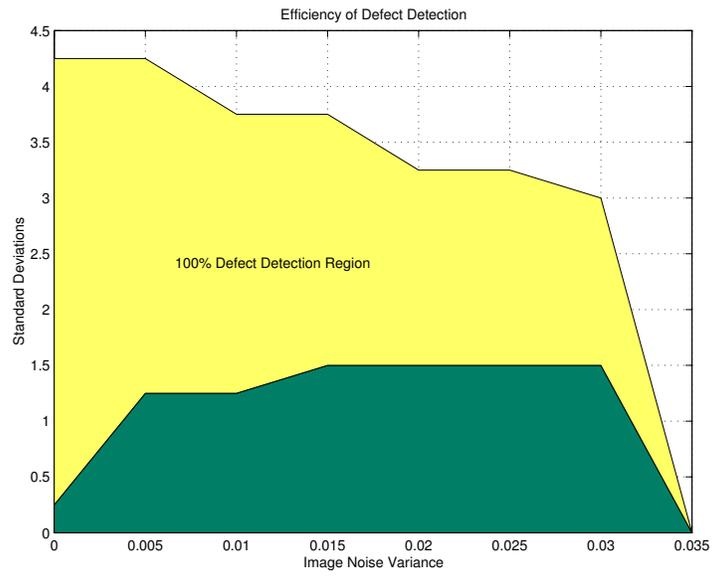
Figure 6: This is where your caption text goes. This is where your caption text goes.



(a)



(b)



(c)

Figure 7: This is where your caption text goes.

Table 1: Two tables that are half page width

A	B	C	A	B	C
555	111	333	555	111	333
555	111	333	555	111	333
555	111	333	555	111	333
555	111	333	555	111	333
555	111	333	555	111	333

```

555 & 111 & 333 \\
555 & 111 & 333 \\
555 & 111 & 333 \\
555 & 111 & 333 \\
555 & 111 & 333 \\
    \hline
\end{tabular*}

\end{table}

```

## 4 Closing

If you like this package, find bugs, or just have useful comments please let the me know at [atanbakuchi@hotmail.com](mailto:atanbakuchi@hotmail.com). Please note that I am not a  $\text{\TeX}$ hack, just someone who had a wish for this type of package and managed to find a solution.