

Table of Contents

StarCCM+ - a colorful colormap which is readable in gray-scale printouts	1
<i>How to use the colormap</i>	1
pby - original	1
pby - SE flavor	2
<i>Creating the color scheme with tcl</i>	2

StarCCM+ - a colorful colormap which is readable in gray-scale printouts

In some journals we have to *pay extra for colored printouts* (often considerably). To avoid this we could submit manuscripts with gray-scale pictures only. But gray-scale pictures in an PDF might look unimpressive. Or we add the “color online” tag to our plots. This can be of some inconvenience.

Fortunately, there is a workaround!

A color scale can be created which continuously increases in luminescence while no color has the same gray-scale value. That way, in color, you have a set of colors to distinguish levels of your plot and the monochrome representation is still readable in printouts.

As a bonus, this scale also seems to be save for color-blind readers!

Sources:

- <https://ux.stackexchange.com/questions/23876/how-to-find-a-color-scheme-thats-also-useful-when-printed-in-black-and-white>
- <https://stackoverflow.com/questions/13968520/color-selection-for-matplotlib-that-prints-well>
- <http://www.color-blindness.com/coblis-color-blindness-simulator/>

How to use the colormap

1. Download a colormap (pby.colormap, bpy_se.colormap)
2. Import the colormap
(Right click on Tools> Colormaps)
3. Select “Colored grayscale” in your plot

Color scale	Color band	Monochrome band
pby, original version		
pby, Sebastian's flavor		

pby - original

[pby.colormap](#)

```
{'LookupTables': [{'Name': 'pby', 'AlphaValues': [0.0, 1.0, 1.0, 1.0],
'ColorValues': [ 0.0, 0, 0, 0.0, 0.1, 0, 0, 0.4, 0.2, 0, 0, 0.8,
0.30000000000000004, 0.15625000000000001, 0, 1, 0.4, 0.46875, 0, 1, 0.5,
0.78125, 0.16000000000000003, 0.84000000000000001, 0.60000000000000001,
1, 0.36000000000000002, 0.6399999999999999, 0.70000000000000001, 1,
0.56000000000000002, 0.43999999999999995, 0.8, 1, 0.76000000000000001,
0.24, 0.9, 1, 0.96000000000000001, 0.040000000000000036, 1.0, 1, 1, 1.0
```

```
], 'ColorSpace': 0}}]
```

pby - SE flavor

Version of pby color scale. Shortend dark band.

[pby_se.colormap](#)

```
{'LookupTables': [{'Name': 'pby_SEngel', 'AlphaValues': [0.0, 1.0, 1.0, 1.0], 'ColorValues': [ 0.015, 0, 0, 0.10000049999999999, 0.0635, 0, 0, 0.42333545, 0.112, 0, 0, 0.7466704, 0.16050000000000003, 0.03281250000000013, 0, 1, 0.20900000000000002, 0.18437500000000007, 0, 1, 0.2575, 0.3359375, 0, 1, 0.30600000000000005, 0.4875000000000016, 0, 1.228, 0.35450000000000004, 0.6390625000000001, 0, 1.131, 0.403, 0.7906250000000001, 0, 1.034, 0.4515, 0.9421875, 0.14300000000000002, 0.937, 0.5, 1, 0.24, 0.8400000000000001, 0.5485, 1, 0.3369999999999997, 0.7430000000000001, 0.5970000000000001, 1, 0.43400000000000016, 0.6459999999999999, 0.6455000000000001, 1, 0.5310000000000001, 0.5489999999999999, 0.6940000000000001, 1, 0.6280000000000001, 0.4519999999999996, 0.7425, 1, 0.7250000000000001, 0.355, 0.791, 1, 0.8220000000000001, 0.258, 0.8395, 1, 0.919, 0.16100000000000003, 0.888, 1, 1, 0.06400000000000006, 0.9365, 1, 1, 0.20624999999999893, 0.985, 1, 1, 0.8125 ], 'ColorSpace': 0}}]
```

Creating the color scheme with tcl

The colormap above has been created with the attached tcl-scripts

[pby.zip](#)

Run the script in a terminal

```
tclsh pby.tcl > mymap.colormap
```

[Guide](#), [StarCCM](#), [Colormap](#), [Scale](#), [Visualization](#)

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