NR-02

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-1 Numerical Relativity Problems Chapter 2: The 3+1 Deconposition of Einstein's Equations

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https://github.com/zachetienne/nrpytutorial/blob/master/Tutorial-Template_Style_Guide.ipynb

Link to the Style Guide. Not internal in case something breaks.

-1.1.1 NRPy+ Source Code for this module:

None, save the pdf conversion at the bottom of this document.

-1.2 Introduction:

Now we take a look into "so how do we actually go about doing this?" via Numerical Relativity by Baumgarte and Shapiro.

-1.3 Other (Optional):

In order to fascilitate learning, whenever the opportunity arises Sympy will be used.

-1.3.1 Note on Notation:

Any new notation will be brought up in the notebook when it becomes relevant.

-1.3.2 Citations:

[1] linky (descrip)

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1 Problem 1 [Back to top]

Show that 8.2 is a solution of 8.1 by the following method. Assume the point particle to be at the origin r=0 and to produce a spherically symmetric field. Then use Gauss' law on a sphere of radius r to conclude...

$$\frac{d\phi}{dr} = \frac{Gm}{r^2}$$

Deduce 8.2 from this. Consider the behavior at infinity.

2 Addendum: Output this notebook to LaTeX-formatted PDF file [Back to top]

The following code cell converts this Jupyter notebook into a proper, clickable LaTeX-formatted PDF file. After the cell is successfully run, the generated PDF may be found in the root NRPy+ tutorial directory, with filename GR-08.pdf (Note that clicking on this link may not work; you may need to open the PDF file through another means.)

Important Note: Make sure that the file name is right in all six locations, two here in the Markdown, four in the code below.

- GR-08.pdf
- GR-08.ipynb
- GR-08.tex

[1]:
```
import cmdline_helper as cmd    # NRPy+: Multi-platform Python command-line interface
cmd.output_Jupyter_notebook_to_LaTeXed_PDF("GR-08")
```

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Created GR-08.tex, and compiled LaTeX file to PDF file GR-08.pdf
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