

R is dope AF

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R version: 3.5.0

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This document can be found at <https://github.com/darwinanddavis/githubpres>

R session info

R version 3.5.0 (2018-04-23)

Platform: x86_64-apple-darwin15.6.0 (64-bit)

Running under: OS X El Capitan 10.11.6

Matrix products: default

BLAS: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRblas.0.dylib

LAPACK: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRlapack.dylib

locale:

[1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8

attached base packages:

[1] stats graphics grDevices utils datasets methods base

loaded via a namespace (and not attached):

| | | | | | | |
|------|----------------|-----------------|---------------|-----------------|-----------------|-----------------|
| [1] | compiler_3.5.0 | backports_1.1.2 | magrittr_1.5 | rprojroot_1.3-2 | tools_3.5.0 | htmltools_0.3.6 |
| [7] | pillar_1.2.3 | tibble_1.4.2 | yaml_2.2.0 | Rcpp_1.0.0 | stringi_1.2.3 | rmarkdown_1.10 |
| [13] | knitr_1.20 | stringr_1.3.1 | digest_0.6.15 | rlang_0.3.0.1 | evaluate_0.10.1 | |

Overview

This document showcases why R is **dope**.

You can write in-line **code** if you want to differentiate between when you are typing normally or highlighting **model parameters**, for example.

Equations like this $t' = \gamma(t - vx/c^2)$, to appear within text lines.

Create links to your [website](#).

Make footnotes¹.

Use different headings

Like this subheading

Create quoted text

```
Pump the bass in the trunk //
It rattled like a baby hand //
Except this toy cost 80 grand //
And I'm crazy tan, from all the places that I've been //
Just from writing words with a pen //
```

Just like **L^AT_EX**, but *more versatile*.

¹Where the footnote goes here and it is automatically formatted

Define equations

Accordingly, we write the eigenfunction of a spinless particle as the superposition of plane wave states of momentum (π) and energy (E_j) having amplitudes $a(\pi, E_j)$

$$\phi n(r, t) = \sum_{i,j} a(p_i, E_j) e^{\frac{i}{\hbar}(p_i \cdot r - E_j t)}$$

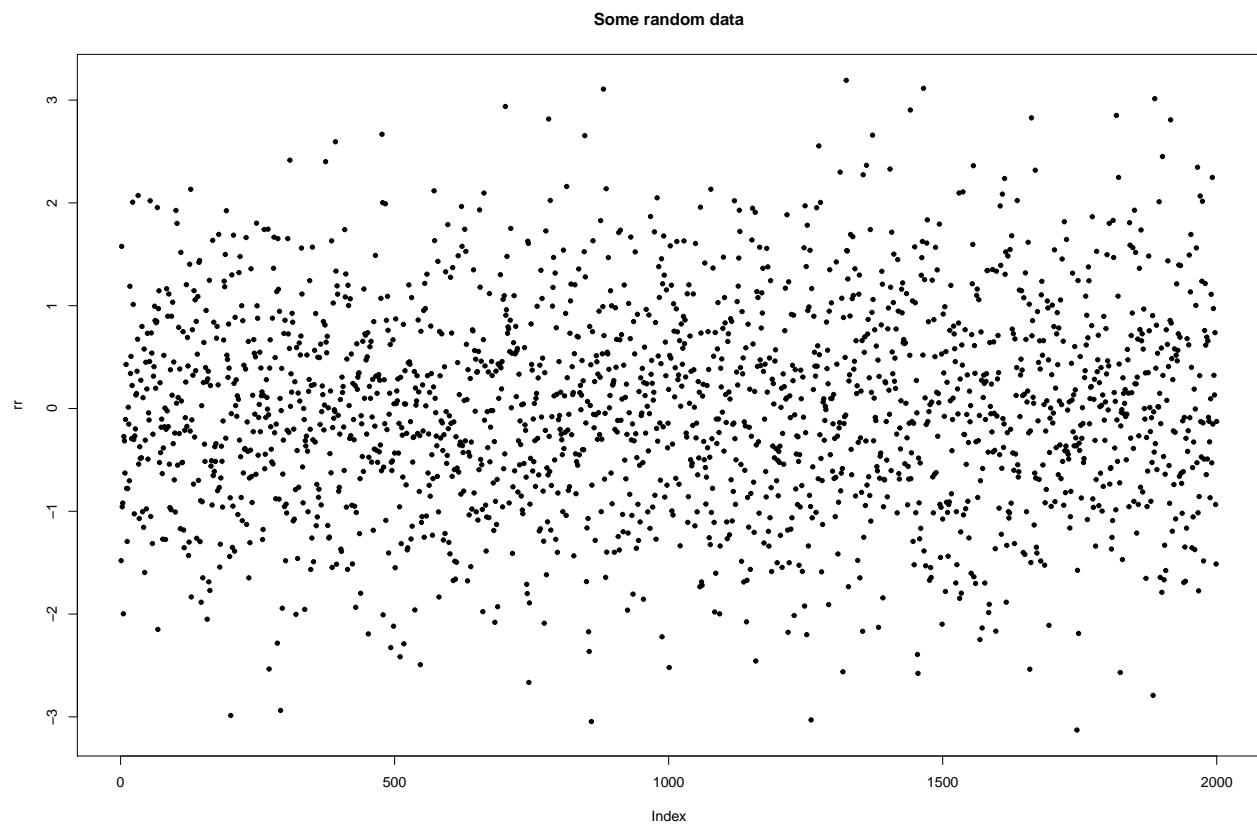
where, for convenience, we have suppressed the eigenfunction indices in $\phi n(r, t)$ and $an(\pi, E_j)$. Using periodic boundary conditions, the normalization of $\phi n(r, t)$ in (1) yields

$$\frac{1}{V_o T_o \hbar^4} \int \phi \cdot (r, t) \phi(r, t) d^3 r dt = \sum a \cdot (p_i, E_j) a(p_i, E_j) = 1$$

Embed images/gifs:

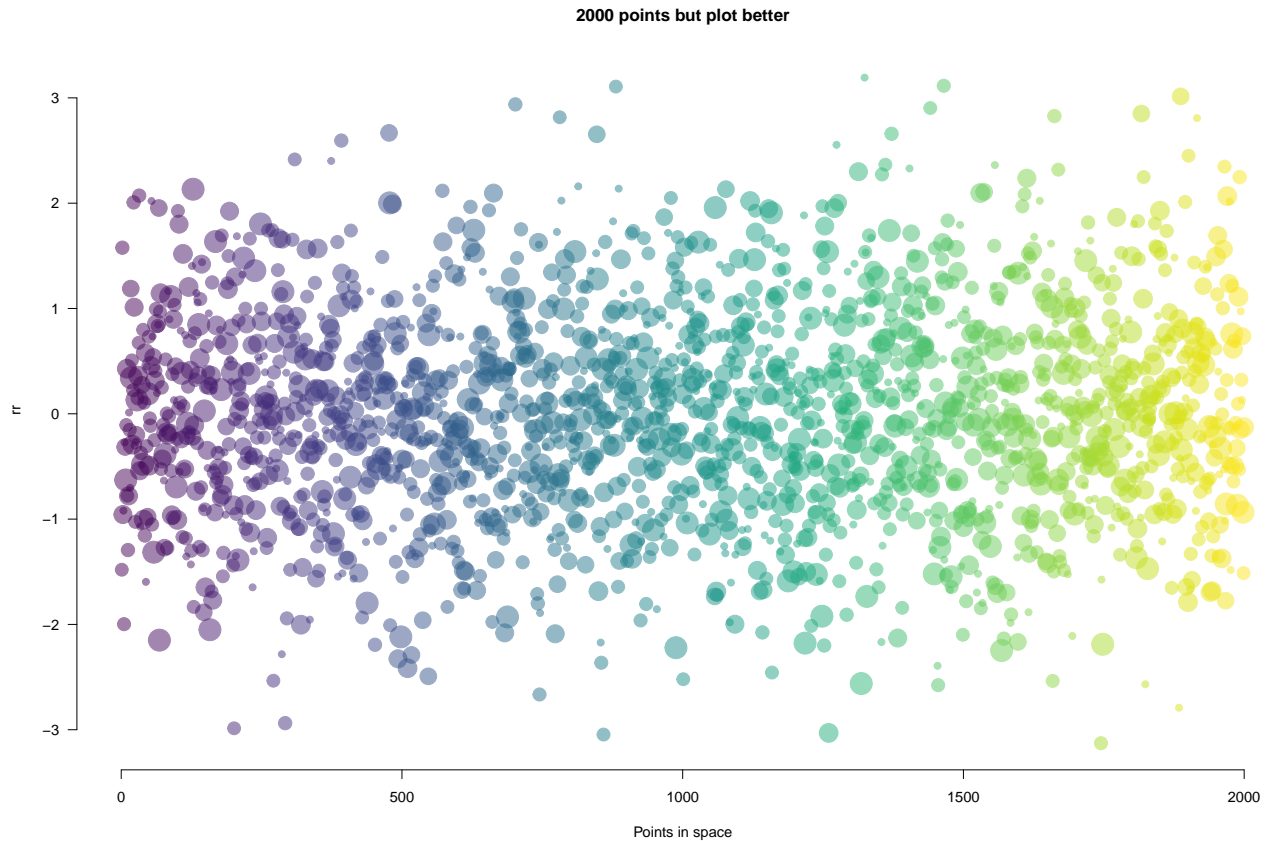


Create, alter, and imbed plots



With associated code to show production/changes.

```
require(viridis)
bm <- 0
par(las=1,bty="n"); xlim <- c(-5,5);ylim <- c(0,0.5)
set.seed(12)
N <- 2000
rr <- rnorm(N); rr2 <- rnorm(N^2); rr3 <- rnorm(N+0.3)
rrd <- density(rr);rrd2 <- density(rr2);rrd3 <- density(rr3)
main <- paste0(N," points but plot better");xlab <- "Points in space"
if(bm==1){
  layout(matrix(c(rep(1,3),2:4), 2, 3, byrow = TRUE));sc <- 1
  plot(rr,las=1,bty="n",col=adjustcolor(viridis(N),0.5),pch=20,cex=runif(10,1,5),
    main=main,xlab=xlab)
for(r in list(rrd,rrd2,rrd3)){
  plot(r,xlim=xlim,ylim=ylim,main="")
  polygon(r,col=adjustcolor(viridis(250)[sc],0.5),border=viridis(250)[sc]);sc <- sc+100}
}else{par(mfrow=c(1,1))
  plot(rr,las=1,bty="n",col=adjustcolor(viridis(N),0.5),pch=20,cex=runif(10,1,5),
    main=main,xlab=xlab)}
```



And tables

Table 1. Definitions of model parameters for individual hosts and **parasites**. Dimensions and units: -, dimensionless; cm, centimetres; J, Joules; L, length.

| Parameter | Definition | Dimension(unit) |
|-----------|-------------------------------|----------------------|
| L | structural length | cm |
| ee | scaled reserve density | J (cm ³) |
| D | host development | — |
| RH | energy in reproduction buffer | J |

Embed code from different languages

This is R code

```
if(pck==1){  
  p<-c("rJava", "RNetLogo"); remove.packages(p)  
  # then install rJava and RNetLogo from source  
  install.packages("rJava", repos = "https://cran.r-project.org/")  
  install.packages("RNetLogo", repos = "https://cran.r-project.org/")  
}
```

shell/bash

```
echo "Hello Bash!"  
pwd # check working dir  
git init # initialise git
```

Octave (and MATLAB from the RMatlab package).

[RMatlab documentation.](#)

```
b = [4; 9; 2] # Column vector  
A = [ 3 4 5;  
      1 3 1;  
      3 5 9 ]  
x = A \ b      # Solve the system Ax = b
```

HTML

```
<!-- links-->  
  <div class="footer">  
    <a href="dd_feed.html"  
      class="transition fade_in">  
      Latest post  
    </a>  
    &nbsp; &nbsp; &nbsp;  
    <a href="dd_contact.html"  
      class="transition fade_in">  
      Contact  
    </a>  
    &nbsp; &nbsp; &nbsp;  
    <a href="dd_subscribe.html"  
      class="transition fade_in">  
      Subscribe  
    </a>  
  </div>
```


CSS

```
body {  
  color: red;  
}
```

Javascript to access html and css

```
$('.title').css('color', 'red')
```

Python

```
x = 'hello, python world!'  
print(x.split(' '))
```

Here's a complete list of available languages

```
names(knitr::knit_engines$get())
```

| | | | | | | | | |
|------|----------|-----------|-------------|--------|-------------|-----------|---------|---------|
| [1] | "awk" | "bash" | "coffee" | "gawk" | "groovy" | "haskell" | "lein" | "mysql" |
| [9] | "node" | "octave" | "perl" | "psql" | "Rscript" | "ruby" | "sas" | "scala" |
| [17] | "sed" | "sh" | "stata" | "zsh" | "highlight" | "Rcpp" | "tikz" | "dot" |
| [25] | "c" | "fortran" | "fortran95" | "asy" | "cat" | "asis" | "stan" | "block" |
| [33] | "block2" | "js" | "css" | "sql" | "go" | "python" | "julia" | |

All from R!

References

Efthimiades, S., Physical meaning and derivation of Schrodinger and Dirac equations, Department of Natural Sciences, Fordham University. [doi: d34464566](#).

Malishev, M., Bull, C. M., & Kearney, M. R. (2018). An individual-based model of ectotherm movement integrating metabolic and microclimatic constraints. *Methods in Ecology and Evolution*, 9(3), 472-489.