Details on the histogram simulators

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- Some of the models are a bit different, particularly for the cases where

$$\frac{\partial}{\partial V} T(E;V) \neq 0.$$

3 models to choose from: don't worry about the details behind them, for now.

- i The voltage-independent model $\left(\frac{\partial}{\partial V} T(E;V) = 0\right)$; same as what we used over the summer.

- s
- d

} Models where $\frac{\partial}{\partial V} T(E;V) \neq 0$.

- other parameters to the program are similar to what we had over the summer.

2) Number of points to simulate: 1,000,000 works

3) $E_F = 0.0$

4) δ_E: my default is 0.05, but anything 0.01 – 0.1 is probably fine.

5) $\tilde{E}$: anywhere -10 through -3, -6, or -5, is reasonable.

6) δ_η: same comment as for δ_E

7) $\bar{\Gamma}$: anywhere 0.5 – 1 is good.

8) $V_{min} = -2$

9) $V_{max} = 2$

10) η: look at $\eta = 0.3$, 0.4, and 0.5

- For analysis, pipe the output from the simulator into the "binner" program

./simulator-v-2d [parameters] | ./binner-v-2d $\underbrace{1{,}000{,}000}_{\#2 \text{ above}}$ 100 > output-file

- A nice, open-source, piece of software for visualizing this data is gnuplot (check the linux distros; it might come installed).

~~text~~ inside gnuplot

> set pm3d map

> splot "filename"

will plot the data.

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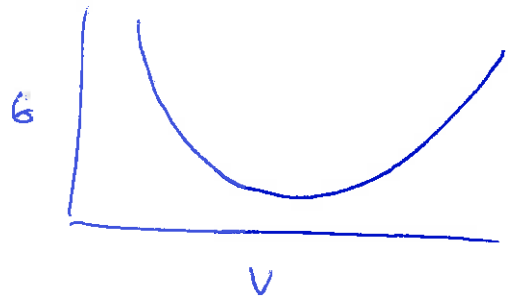
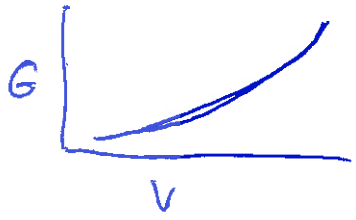
What I'd like you to do:

- Look at the 3 models (i, s, & d) for various $\tilde{E}$, δ_E, $\tilde{\Gamma}$, δ_Γ combinations.

Preliminary results I've seen suggest that models i and d give mostly quadratic-looking peaks:



The s model is more like a slightly curved line:



If you find parameter sets that <u>don't</u> *qualitatively* generate histograms with these shapes, let me know.

Send me any questions you have!

Thanks