**Examining the Information Content of Voltage-Dependent, Two-Dimensional Conductance Histograms: The Outline**

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1. Introduction and Background **[may need to be broken into several sections?]**
   1. Explanation of conductance and significance
   2. Background information on quantum properties
      1. Electron transport variation
      2. Techniques for measurement of conductance
   3. Conductance histograms
      1. Variations in contact geometry = Need for statistical analysis
      2. Explanation of how the histogram works
      3. Recent developments of the histogram: I-V and G-V; study of voltage effects
   4. Voltage-Dependent Electron Transport
      1. Landauer-Buttiker-Imry theory of coherent scattering assumption (transmission function)
      2. Explanation of variables E, epsilon, eta, gamma, T, V, e, h, I, EF, etc. that are used
2. Methods
   1. Derivation of differential conductance
      1. Start with transmission function
      2. Assumption of symmetrically coupled electrodes and zero-temperature limit perspective of tunneling to avoid inelastic effects
      3. Heaviside step function
      4. Arrival at familiar expression; discussion on ignoring a messy integral (possible future work)
   2. Simulating conductance data
      1. Derived equation relates conductance to parameters including the all-important voltage
      2. Before coding, want to consider theoretical significance of realistic variation each time measurement is taken – use statistical distribution of input values in order to “blur” data
      3. Code equation and normal distribution data processing into C++ program to quickly generate theoretical data
         1. This step is the actual key to the entire project: what’s the best way to generate the most realistic data with distribution and voltage scanning and choosing to focus on specific variables
3. Results and Discussion (Data Analysis) **[okay so this is what we’re stuck on I guess]**
   1. Reveal data generated and how it fits to actual, real experimental data
      1. We see a definite effect by voltage on simulated conductance, we just need to make up “rules” to go with it
   2. Discuss what doesn’t seem to make sense and why we think it is like this
4. Conclusion
   1. Reiteration of importance of molecular conductance
   2. Summary of the successes of our project
   3. Mention things that don’t make sense and propose it for future work
5. References
   1. Properly cite papers