Interpolation And Curve Fitting Lab

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1. Extract average subthreshold swing ($\frac{\partial V_G}{\partial log_{10}(I_D)}$) as the drain current varies over 3 orders of magnitude. The data is given in TransferCharacData.dat. Note that the subthreshold swing is calculated in the OFF-state i.e. $V_G < V_{th}$

2. Calculate the output resistance of the MOSFET ($\frac{\partial I_D}{\partial V_D}$). The data is given in OutputCharacData.dat.

3. Given the measured data of I-V characteristics of the diode. Extract the I_0 and ideality factor η. The data is given in DiodeCharac.dat. Note that the ideality factor is calculated using the relatively moderate values of the applied bias. The data is given in DiodeI-V.dat.

4. Consider yourself working for a Ballistic missile intercept system. Assume that the once the missile is launched it will not change its path. Write a C program to predict the trajectory of the incoming Ballistic missile. Remember that this system has to work very fast and has to be accurate so ensure that the computation that has to be done is minimum. The data is given in BallisticMissileTrajectory.dat (Format t, x, y). Estimate the initial velocity and the angle of launch

5. In memristor device (memory+resistor), from our analysis we get the following data. Can you find out an equation for it ?