

EE597
Midterm Exam. 1
Due Date: Wednesday 3/30/2005

Starting from the S-parameter measurements provided in the Excel data file “**soi_sparam.xls**”, extract the floating body voltage of the near fully depleted SOI MOSFET starting from a suitable small signal model.

The approach discussed in class uses CV measurements to extract m_j and V_j . You can do the same from the S-parameter measurements. In this case, you have only six data points for CV plot. You may assume $V_j = 0.734$ V for all cases.

In the data file: R:S(1,1) means real part of S_{11}
I:S(1,1) means imaginary part of S_{11}

The frequency range is from 1 GHz to 6 GHz.
Gate voltage $V_{gs} = 0$. V for all measurements
Drain Voltage: $V_{ds} = 0, 0.5, 1.0, 1.5, 2.0, 2.5$ V.

Plot the floating voltage V_{BS} vs drain voltage and explain its shape.
Also plot the dependence of the extracted capacitors on V_{DS} .