Hello 6.012 Students,

My name is Ravi Palakodety and I am one of the 6.012 TAs this term. I wanted to drop a note to those of you that are working on the Weblabs currently.

The PN diode you are analyzing is a REAL diode, and thus may display some nonidealities. The weblab assignment asks that you analyze and quantify one of these non-idealities (namely, the series resistance). In addition, the diode under test seems to be displaying a nonideality in the exponential term.

Whereas the ideal behavior is given by { I = Is*[exp(qV/kT)-1] }, the diode under test seems to behave as { I = Is*[exp(qV/mkT)-1] }.

This nonideality will affect the back-extracted temperature for part 3. Instead of back-extracting the temperature, please use (and record) the temperature measured and recorded by the weblab. This should be in the first line of your downloaded data file.

In addition, rather than extracting the temperature for part 3, please extract the nonideality factor m, given in the equation above. You will be able to find this using the same scheme you used to back-extract the temperature.

Finally, a separate diode called a Schottky diode is available for investigation in slot 7 of the weblab device list. This diode displays more ideal characteristics, but due to a different physical mechanism, exhibits a lower "ON" voltage. Interested students can perform the same weblab exercise on this diode, and will notice more ideal behavior. Please use a maximum forward voltage of 0.8V on the Schottky.

Investigating the Schottky diode is NOT required.

Please feel free to ask questions via email. The TA staff is looking forward to seeing you in Tutorial on Monday and Tuesday,

Thank you,
Ravi Palakodety