Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Determination
of property in semiconductors CARLOS FIGUEROA, Depto de IIS Unison, RAÚL RIERA, DIFUS Unison, MARTÍN MOLINAR — In this work it is doing a comparative study of the most conventional semiconductors in electronics, such as silicon (Si), germanium (Ge) and gallium arsenide (GaAs). We present the mathematical development of the magnitude that determines the intrinsic semiconductor property, which is the concentration of charge carriers, and is discussed in each case with respect to temperature variation. On the other hand, in the case of extrinsic semiconductors is calculated potential barrier of a pn junction. The task to make in this work is to use the intrinsic concentration of each material and their respective potential barrier to verify their behavior in relation to temperature. In the case of reverse bias generates a graphical output capacitance associated with these quantities. It is also used matlab to solve the transcendental equation that defines the relationship between voltage, resistance and current of a semiconductor diode bias. These demonstrations and concepts are important because they govern the operation of basic electronic devices and can characterize the differences between the Si, Ge and GaAs.

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Date submitted: 28 Nov 2010 Electronic form version 1.4