2011-2012 PhD Qualifying Examination
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1. Draw typical drain current-drain voltage characteristics of n channel MOSFET(long channel) made of Si if measured at room temperature for Vgs=0, 0.5, 2.0v. Let's assume the channel doping concentration is 10E17cm^{-3}, V_T=0.5V and V_{BD} (drain breakdown voltage at Vg=0) =5V at room temperature.
2. What would happen if you measure it at 50K?
3. What would happen if you measure it at 700K?
4. If there is no scattering of electrons, how would the Id-Vd characteristics look like at room temperature, and why?