Regions of Inversion in Terms of Terminal Voltages

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- **Definitions in Terms of Gate Voltage**
  - Let us assume arbitrarily that the drain end is no more heavily inverted than the source end.

$$V_{DB} \geq V_{SB} \; or \; V_{DS} \geq 0$$

  - Then we can give the condition for operation in a certain inversion region, in terms of the inversion level at the *source* end of the channel.

- **Definitions in Terms of Source and Drain Voltages**
  - For a given V_{GB} , the surface potential at the drain (or source) end of the channel can be plotted vs. the drain (or source) voltage with respect to the body, as shown before.
  - It is clear that one can determine the level of inversion at the source and drain ends of the channel

- table

Regions of Inversion…

- Definition of regions of operation for a MOS transistor in terms of source-substrate and drain-substrate voltages for a given V_{GB}.