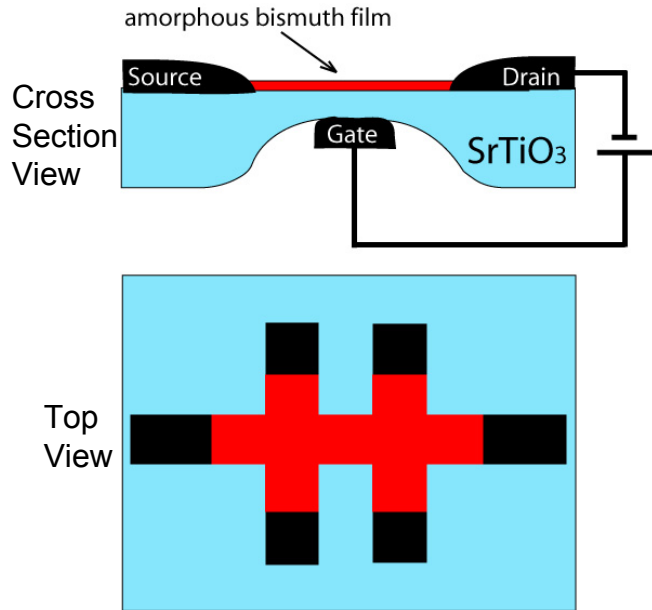


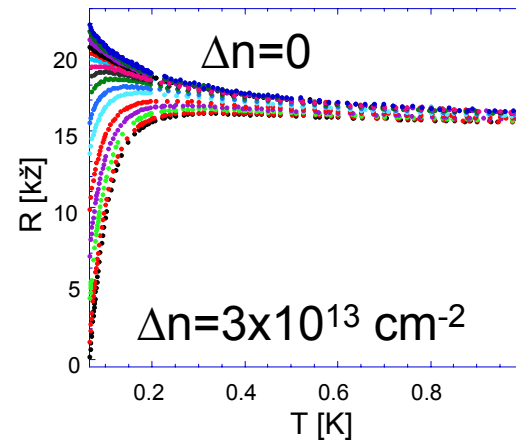
# E-Beam Deposition of Contacts for Study of Ultrathin Films

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- Electrostatically- and Parallel Magnetic Field- Tuned Insulator-Superconductor Transitions
  - ◆ Amorphous Bismuth Film is insulating with zero transferred electrons.
  - ◆ Transferring  $3 \times 10^{13} \text{ cm}^{-2}$  of electrons into the film by use of the electric field effect induces superconductivity with a 60 mK transition temperature.
  - ◆ Parallel magnetic fields quench superconductivity.



- Deposition of Platinum Contacts Performed at N.F.C.

- ◆ 100 Å thick 4-probe transport contacts on top of epi-polished SrTiO<sub>3</sub> substrate.
- ◆ 1000 Å thick gate electrode on thinned surface on bottom of substrate.

- K. A. Parendo, K. H. S. B. Tan, and A. M. Goldman, Physical Review B **73**, 174527 (2006)
- K. A. Parendo, K. H. S. B. Tan, and A. M. Goldman, Physical Review B **74**, 134517 (2006)