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The phase diagram and Bose metal in superconducting nanowires[1] TYLER MORGAN-WALL[2], HANNAH HUGHES[3], NIKOLAUS HARTMAN[4], NINA MARKOVIC[5], Johns Hopkins University — We experimentally investigated the transport properties of thin, narrow superconducting aluminum nanowires as a function of magnetic field and temperature. We characterized the full superconducting phase diagram with respect to magnetic field and temperature, and show the onset of a flux-flow phase for certain values of temperature and magnetic field. The flux-flow resistance follows the Bardeen-Stephen model and it is shown that the resistance increases linearly with respect to magnetic field in this region of the phase diagram. In addition, we show the saturation to a non-zero finite resistance state below the normal state resistance for certain magnetic fields as the temperature decreases to zero.

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