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Electrical Transport in Iron Cobalt Silicide Nanowires DREW REBAR, Louisiana State University-Baton Rouge, JOHN DEGRAVE, SONG JIN, University of Wisconsin-Madison, JOHN DITUSA, Louisiana State University-Baton Rouge — Iron silicide is a small gap insulator with fascinating physical properties that can be made metallic and magnetic when doped with cobalt. With the substitution of cobalt for iron, Fe1-xCoxSi, the material undergoes an insulator-to-metal transition becoming a half metal for a wide range of x. The ground state is helimagnetic with distinct itinerant character. It has been demonstrated by others that an exotic intermediate magnetic vortex or skyrmion state exists between the helimagnetic and ferromagnetic phases in small applied fields. Electron transport in bulk Fe1-xCoxSi has been found to be dominated by electron-electron interaction effects similar to what has been found in prototypical semiconductors such as Si:P. Here we probe low temperature electron transport in CVD-grown Fe1-xCoxSi nanowires with x=0.05. The reduced dimensionality presents the opportunity to characterize the conductivity where only the phase-coherent contribution may be constrained to one dimension. Results of low temperature transport measurements of these wires will be presented.

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