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In-plane resistivity anisotropy in underdoped $Ba(Fe_{1-x}Ni_x)_2As_2$ and $Ba(Fe_{1-x}Cu_x)_2As_2$[1] HSUEH-HUI KUO, JIUN-HAW CHU, JAMES ANALYTIS, LEO YU, KRISTIAAN DE GREVE, PETER MCMAHON, YOSHIHISA YAMAMOTO, IAN FISHER, Stanford University — Underdoped Fe arsenide superconductors suffer a structural transition that is either coincident with, or precedes the onset of long range antiferromagnetic order. Crystals tend to form a dense array of twins upon cooling through the structural transition, but uniaxial pressure can be used to almost completely detwin samples, enabling measurement of the associated in-plane electronic anisotropy. Initial experiments on detwinned samples of $Ba(Fe_{1-x}Co_x)_2As_2$ revealed a large in-plane resistivity anisotropy which varied non-monotonically with cobalt concentration. Here we present data extending the initial study to include detwinned samples of $Ba(Fe_{1-x}Ni_x)_2As_2$ and $Ba(Fe_{1-x}Cu_x)_2As_2$. The composition-dependence of the resistivity anisotropy ρ_b/ρ_a reveals a striking correlation with that of the Hall coefficient for all three substitution series.

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