Uniaxial pressure effects on the transport properties in Ba(Fe$_{1-x}$Co$_x$)$_2$As$_2$ single crystals

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Using single crystals of the electron-doped superconductor Ba(Fe$_{1-x}$Co$_x$)$_2$As$_2$, doping dependence of uniaxial (c-axis) pressure effects on the transport properties has been systematically examined. Optimally doped Ba(Fe$_{0.920}$Co$_{0.080}$)$_2$As$_2$ shows $T_c$ suppression under the c-axis pressure (Fig.1(a)). In under-doped Ba(Fe$_{0.963}$Co$_{0.037}$)$_2$As$_2$, in contrast, $T_c$ is enhanced under the c-axis pressure, which is accompanied by a suppression of the resistivity-upturn near $T_c$ (Fig.1(b)). These observations are qualitatively similar to the hydrostatic pressure effects. On the other hand, since the c-axis pressure in our experiment is one order of magnitude smaller than the hydrostatic pressure, both superconductivity and the competing SDW order are quite sensitive to the c-axis pressure.

![Figure 1](image_url)

**Fig. 1.** The temperature dependence of the ab-plane resistivity in (a) optimum and (b) under-doped Ba(Fe$_{1-x}$Co$_x$)$_2$As$_2$ single crystals under the c-axis pressures.