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Physical Properties of CaFe$_4$As$_3$ Single Crystals AMAR KARKI, YIMIN XIONG, JIANNENG LI, SHANE STADLER, GREGORY MCCANDLESS, JULIA CHAN, RONGYING JIN, Louisiana State University — New compound CaFe$_4$As$_3$ crystallizes in an orthorhombic structure with Fe$_2$As$_2$ layers aligned along $b$ direction but a rectangular cross-section in $ac$ plane. The needle-shaped CaFe$_4$As$_3$ single crystals were grown and are found to undergo two successive phase transitions occurring at $T_1 \sim 90$ K and $T_2 \sim 27$ K, respectively. At $T_1$ the electrical resistivity increases and magnetic susceptibility decreases in both parallel and perpendicular to $b$ directions consistent with the scenario of spin-density-wave formation. At $T_2$, resistivity decreases sharply at $T_2$ with hysteresis while magnetic susceptibility increases along either $b$ direction or $ac$ plane. The underlying physics will be discussed by taking into account other physical properties.

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