Supplemental Material for Quasi-2D Fermi surface of superconducting line-nodal metal $CaSb_2$

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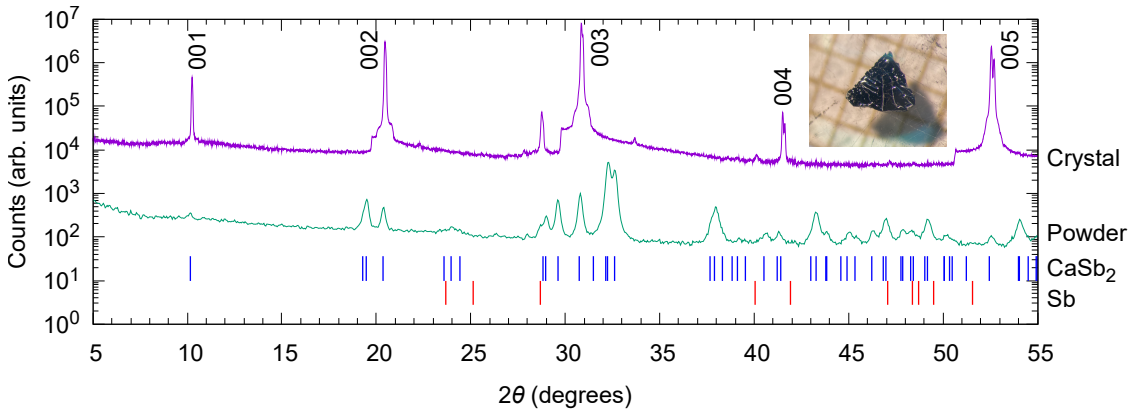

FIG. S1. X-ray diffraction patterns of the crystal and powder of a $CaSb_2$ sample. The vertical lines at the bottom indicate the calculated peak positions for $CaSb_2$ and Sb. The crystal shows diffractions only with the $00l$ indices, evidencing that the crystal is grown in the ab plane. The inset is a photo of a single crystal of $CaSb_2$. The mesh beneath the crystal shows 1 mm.

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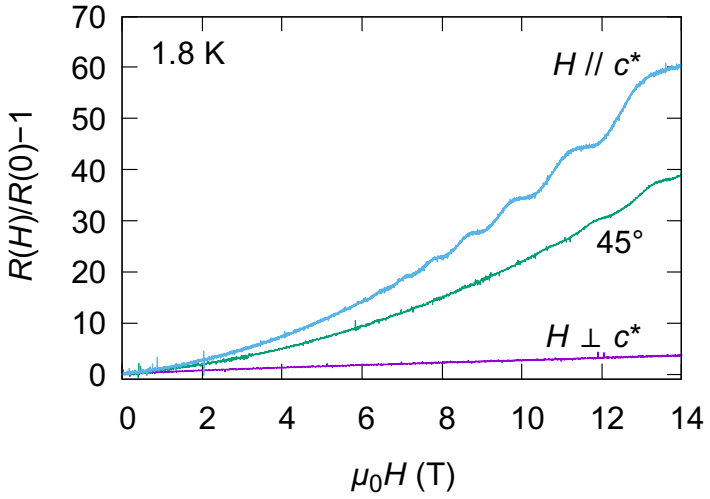

FIG. S3. Magnetoresistance of $CaSb_2$. Magnetoresistance is 6000% with $\mu_0 H = 14$ T $\parallel c^*$ and 370% with $H \perp c^*$. We observed Shubnikov–de-Haas oscillations above $\mu_0 H = 6$ T $\parallel c^*$.

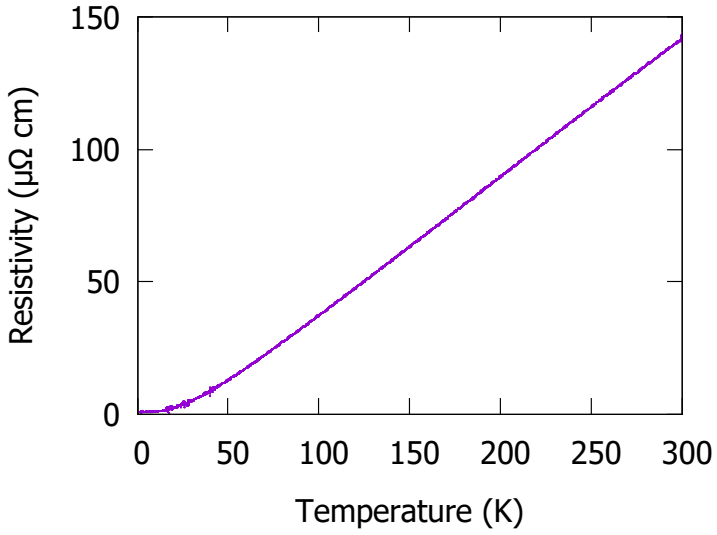

FIG. S2. Resistivity of a $CaSb_2$ single crystal from room temperature. The residual resistivity is 0.77 μΩ cm, and the residual-resistance ratio is 184.

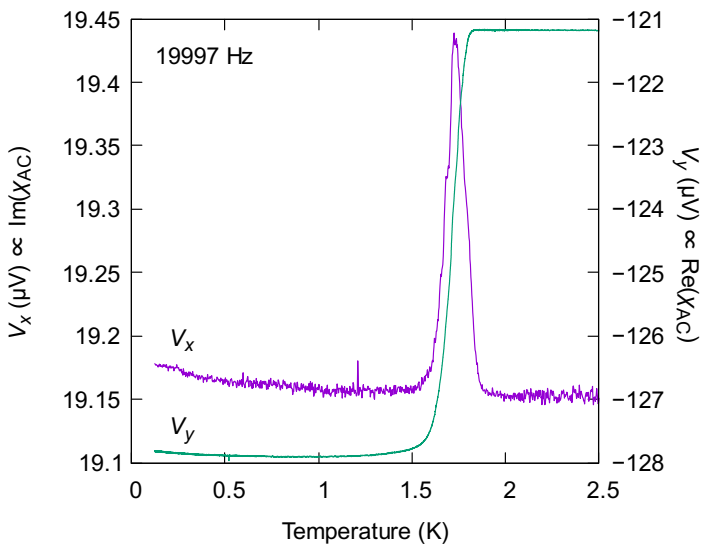

FIG. S4. Alternating-current magnetic susceptibility χ_{AC} of $CaSb_2$ with a frequency of 19 997 Hz. We observed a single transition with the onset at 1.8 K and the peak in the imaginary part at 1.7 K in contrast to the double transition in a polycrystalline sample.

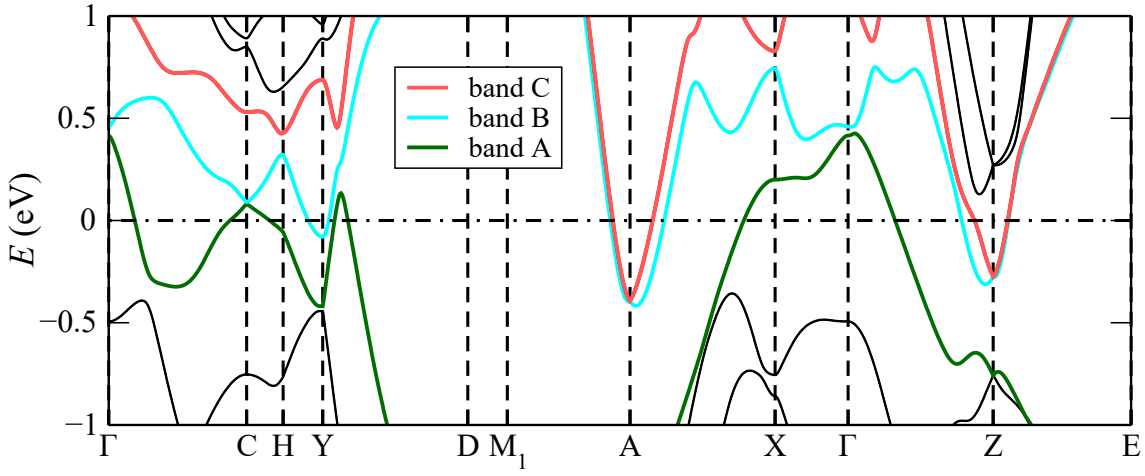

FIG. S5. Calculated band structure of $CaSb_2$. Band A has three-dimensional Fermi surfaces mainly around the Γ point. Bands B and C have quasi-two-dimensional Fermi surfaces along the ZA line. Bands B and C form Dirac lines (degeneracy along certain curves) at the Brillouin-zone boundary.