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Anisotropic thermopower and magnetothermopower in a misfit-layered calcium cobaltite[1] HUAIHONG GUO, TENG YANG, ZHIDONG ZHANG, Institute of Metal Research, Chinese Academy of Sciences — An unusual anisotropy of thermopower and magnetothermopower has been observed in the powerful thermoelectric $Ca_3Co_4O_{9+\delta}$ single crystal. The in-plane thermopower is about twice as big as the out-of-plane thermopower. Combining *ab initio* band structure calculation with semi-classical model analysis, we understand this anisotropy with band structure effects and especially with anisotropic Fermi surface. We find that a strong anisotropy in the topology of Fermi surface leads to the anisotropy of (magneto)thermopower. This study may also shed light on anisotropic properties of other layered cobalt oxides.

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