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Attractive electron-electron interaction induced by the Bloch band topological field JUNREN SHI, Institute of Physics, Chinese Academy of Sciences, QIAN NIU, University of Texas at Austin — We demonstrate a new possibility for the occurrence of the attractive electron-electron interaction in ferromagnetic metals. Unlike that of the conventional origin via the boson-exchange (spin fluctuation), this attractive interaction is induced by the Bloch band topological field, which transforms the Coulomb repulsion to a direct attractive interaction between electrons, resulting in unconventional superconductivity with the isotropic p -wave pairing. Our study highlights the fundamental effects of the Bloch band topological field, which presents in a large class of crystalline materials. It also provides a plausible alternative theory for the recently discovered ferromagnetic superconductors UGe₂ and ZrZn₂.

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