Spiraling Fermi arcs in Weyl materials\textsuperscript{1} SONGCI LI, ANTON ANDREEV, Univ of Washington — In Weyl materials the valence and conduction electron bands touch at an even number of isolated points in the Brillouin zone. In the vicinity of these points the electron dispersion is linear and may be described by the massless Dirac equation. This results in nontrivial topology of Berry connection curvature. One of its consequences is the existence of peculiar surface electron states whose Fermi surfaces form arcs connecting projections of the Weyl points onto the surface plane. Band bending near the boundary of the crystal also produces surface states. We show that in Weyl materials band bending near the crystal surface gives rise to spiral structure of energy surfaces of arc states. The corresponding Fermi surface has the shape of a spiral that winds about the projection of the Weyl point onto the surface plane. The direction of the winding is determined by the helicity of the Weyl point and the sign of the band bending potential. For close valleys arc state morphology may be understood in terms of avoided crossing of oppositely winding spirals.

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