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Berry phase and color superconductivity with topology

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We uncover novel topological properties of the color superconductivity phases of one-flavor QCD [1]. We show the topological number associated with Berry monopole of chiral fermions will be “inherited” by the Cooper pair composed by the quarks with opposite chirality in a non-trivial way. Our results generalize Li and Haldane’s argument for superconducting Weyl semi-metals with topology [2] and account for new features induced by the color structure of QCD. We discuss the relevance of our findings to the topological phase diagram of QCD.

[1] N. Sogabe and Yi Yin, in preparation.

[2] Yi Li and F. D. M. Haldane, “Topological nodal Cooper pairing in doped Weyl metals,” *Phys. Rev. Lett.* 120, 067003 (2018).

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