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Topological Odd-Parity Superconductivity Close to Type-II 2D Van Hove Singularities HONG YAO, Tsinghua University, FAN YANG, Beijing Institute of Technology — We study unconventional superconductivity induced by weak repulsive interactions in 2D electronic systems at Van Hove singularity (VHS) where electronic density of states is logarithmically divergent. We define two types of VH saddle points. For type-I VH systems, weak repulsive interactions generically induce unconventional singlet pairing. However and more interestingly, for type-II VH systems renormalization group treatment shows that weak repulsive interactions favor triplet pairing (e.g. p-wave) when the Fermi surface has no good nesting. When such type-II VH systems respecting tetragonal or hexagonal point group symmetry, topological superconductivity (chiral p+ip or time reversal invariant Z_2 p+ip pairing) will generally occur. We shall also discuss implications of this study to recently discovered BiS2-based superconductors and other superconducting materials that host type-II VH singularities in their Fermi surfaces.

Hong Yao
Tsinghua University

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