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High-Tc Odd-parity Superconductivity in Lightly Hole-doped Monolayer Transition Metal Dichalcogenides Through Proximity YI-TING HSU, Cornell University, KYUNGMIN LEE, Ohio State University, EUN-AH KIM, Cornell University — Lightly hole-doped monolayer transition metal dichalcogenides (p-doped TMDs) are a family of multi-valley materials that host opposite species of spinless electrons in each valley due to the intrinsic Ising spin-orbit coupling. Such spin-valley locked low-energy bandstructure together with the moderate electronic correlations expected for d-electrons make p-doped TMDs a promising platform for unconventional superconductivity, as we pointed out in Ref. [1]. Here, we propose an alternative approach to obtain unconventional pairings besides hoping for intrinsic superconductivity, i.e. proximitizing. We investigate the pairing symmetry induced in p-doped TMDs when coupled to a d-wave superconductor, such as cuprates, in proximity. By solving the Bogoliubovde Gennes (BdG) equation on the interface of the heterostructure self-consistently, we find that nodal odd-parity pairing is induced. The proposed setup offers a platform for high-temperature odd-parity two-dimensional superconductivity. [1]: Y.-T. Hsu, A. Vaezi, M. H. Fischer, E.-A. Kim, Topological superconductivity in monolayer transition metal dichalcogenides, arXiv:1606.00857 (2016)

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