

Abstract Submitted  
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**Valley density-wave (VDW) and Superconductivity in Iron-Pnictides**<sup>1</sup> VLADIMIR CVETKOVIC, ZLATKO TESANOVIC, Department of Physics and Astronomy, The Johns Hopkins University, Baltimore, MD — One of the experimentally observed features of iron-pnictide superconductors is the structural transition and SDW ordering occurring at almost the same temperature. Starting from a tight-binding model [1], we construct an effective theory for iron-pnictides with the distinctive two hole and two electron Fermi surfaces. This theory is then mapped onto a negative-U Hubbard model with additional orbital and spin flavors [2]. We demonstrate that the superconducting instability of the attractive Hubbard model — valley density-wave (VDW) — corresponds to the observed structural and SDW orders. The deviations from perfect nesting between the hole and electron Fermi surfaces are mapped onto the Zeeman field which causes portions of Fermi surface to remain ungapped. The origin of pnictide superconductivity in this model, and its ties to the VDW are discussed. [1] V. Cvetkovic and Z. Tesanovic, <http://arxiv.org/abs/0804.4678>. [2] V. Cvetkovic and Z. Tesanovic, <http://arxiv.org/abs/0808.3742>.

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