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Do Se vacancies electron dope monolayer FeSe? TOM BERLIJN, Oak Ridge National Laboratory, HAI-PING CHENG, P.J. HIRSCHFELD, University of Florida, WEI KU, Brookhaven National Laboratory — Following the discovery of the potentially very high temperature superconductivity in monolayer FeSe we investigate [1] the doping effect of Se vacancies in these materials. We find that Se vacancies pull a vacancy centered orbital below the Fermi energy that absorbs most of the doped electrons. Furthermore we find that the disorder induced broadening causes an effective hole doping. The surprising net result is that in terms of the Fe-*d* bands Se vacancies behave like hole dopants rather than electron dopants. Our results exclude Se vacancies as the origin of the large electron pockets measured by angle resolved photoemission spectroscopy. TB was supported by DOE CMCSN and as a Wigner Fellow at the Oak Ridge National Laboratory.

[1] T. Berlijn, H.-P. Cheng, P. J. Hirschfeld, and W. Ku, arXiv:1307.0140.

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