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Quantum Oscillations from generic surface Fermi arcs in Weyl semi-metals YI ZHANG, DANIEL BULMASH, PAVAN HOSUR, Stanford University, ANDREW POTTER, ASHVIN VISHWANATH, University of California, Berkeley — We re-examine the semiclassical derivation of quantum oscillations, and emphasize the correct definition of the chemical potential from the energy-time quantization perspective. In particular, for a Weyl semi-metal with surface Fermi arcs, the most natural energy reference point does not necessarily coincide with the energy of the bulk Weyl nodes. This results in several important amendments to previous conclusions for generic Weyl semi-metals. We also propose a simple lattice realization of Weyl semi-metals following the layered prescription and verify our theoretical conclusions with exact numerical studies.

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