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Monte Carlo Study of Competing Orders in a Nearly Antiferromagnetic Metal EREZ BERG, YONI SCHATTNER, Weizmann Institute of Science, MAX GERLACH, SIMON TREBST, University of Cologne — We study a two-dimensional lattice model of a metal on the verge of an antiferromagnetic transition. The model can be simulated using the quantum Monte Carlo technique with no sign problem. We compute the antiferromagnetic, superconducting, charge density wave, and pair density wave susceptibilities, as well as the superfluid density, across the phase diagram. Near the putative antiferromagnetic quantum critical point, we find a dome-shaped d-wave superconducting phase. The electronic density of states displays an opening of a gap at temperatures moderately above the superconducting T_c . Our results provide insights into the interplay of antiferromagnetism and unconventional superconductivity at intermediate to strong coupling.

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