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Competing order parameters in Fermi systems with engineered band dispersion CHIEN-TE WU, RUFUS BOYACK, BRANDON ANDERSON, K LEVIN, James Franck Institute — We explore a variety of competing phases in 2D and 3D Fermi gases in the presence of novel dispersion relations resulting from a shaken optical lattice. We incorporate spin imbalance along with attractive interactions. In 3D, at the mean field level we present phase diagrams reflecting the stability of alternative order parameters in the pairing (including LOFF) and charge density wave channels. We perform analogous studies in 2D, where we focus on the competition between different paired phases. Important in this regard is that our 2D studies [1] are consistent with the Mermin Wagner theorem, so that, while there is competition, conventional superfluidity cannot occur. [1] C.-T. Wu, B. M. Anderson, R. Boyack, and K. Levin, arXiv:1509.00857 (to be published in Phys. Rev. Lett.)

Chien-Te Wu
James Franck Institute

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