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Pairing phenomena in quasi-2D Fermi gases

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Quasi-two-dimensional Fermi systems are both of fundamental interest and technological importance. Recent advances in cold-atom experiments have now made it possible to investigate model quasi-2D Fermi gases in a controlled manner. In this talk, I will discuss the different pairing regimes in the attractive Fermi gas and how these can be dramatically modified by the finite transverse width of the quasi-2D system. In particular, I find that the critical temperature for pairing and superfluidity can be enhanced by relaxing the transverse confinement and perturbing away from the 2D limit. I will also discuss the exotic phases that may be generated when the spin populations are imbalanced.