

Abstract Submitted  
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**Pairing correlations in a trapped quasi one-dimensional Fermi gas**<sup>1</sup> STEPHEN KUDLA, DOMINIQUE GAUTREAU, DANIEL SHEEHY, Department of Physics and Astronomy, Louisiana State University — We utilize a BCS-type variational wavefunction to study attractively-interacting quasi one-dimensional fermionic atomic gases, motivated by cold-atom experiments that access this regime using an anisotropic harmonic trapping potential (characterized by  $\omega_x = \omega_y \gg \omega_z$ ) that confines the gas to a cigar-shaped geometry. To handle the presence of the trap along the  $z$  direction, we construct our variational wavefunction from the harmonic oscillator Hermite functions that are the eigenfunctions of the single-particle problem. Using an analytic determination of the effective interaction among Hermite function states along with a numerical calculation of the resulting variational equations, we make specific experimental predictions for how local pairing correlations will be revealed in experimental probes like the local density, the momentum distribution, and the momentum correlation function.

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