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Pseudopotential treatment of atoms under two-dimensional confinement KRITTIKA KANJILAL, D. BLUME, Washington State University — The behaviors of atomic gases at cold temperatures are to a very good approximation described by a single atomic physics parameter. Consequently, low-energy observables can be reproduced quite well by replacing the shape-dependent atom-atom potential with a zero-range potential with a properly chosen coupling strength. Following the approach by Stock et al. [Phys. Rev. Lett. 94, 023202 (2005)], we derive pseudopotentials that properly describe the scattering between two atoms in two-dimensional space. The treatment can, e.g., describe the scattering between two spin-polarized fermions in two dimensions. The applicability of the proposed pseudopotentials is tested by performing numerical calculations. *This work is supported by the NSF.

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