

Abstract Submitted
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Configuration interaction matrix elements for the quantum Hall effect¹ RACHEL WOOTEN, Purdue University, JOSEPH MACEK, Retired — In the spherical model of the quantum Hall system, the two-body matrix elements and pseudopotentials can be found analytically in terms of a general scalar pair interaction potential by expressing the pair interaction as a weighted sum over Legendre polynomials. For non-infinite systems, only a finite set of terms in the potential expansion contribute to the interactions; the contributing terms define an effective spatial potential for the system. The connection between the effective spatial potential and the pseudopotential is one-to-one for finite systems, and any completely defined model pseudopotential can be analytically inverted to give a unique corresponding spatial potential. This technique of inverting the pseudopotential to derive effective spatial potentials may be of use for developing accurate model spatial potentials for quantum Monte Carlo simulations. We demonstrate the technique and the corresponding spatial potentials for a few example model pseudopotentials.²

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²R. Wooten, J. Macek, arXiv:1408.5379

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