Nuclear Theory

A momentum-space Argonne V18 interaction

S.Veerasamy, W. N. Polyzou

(Submitted on 10 Jun 2011)

This paper gives a momentum-space representation of the Argonne V18 potential as an expansion in products of spin-isospin operators with scalar coefficient functions of the momentum transfer. Two representations of the scalar coefficient functions for the strong part of the interaction are given. One is as an expansion in an orthonormal basis of rational functions and the other as an expansion in Chebyshev polynomials on different intervals. Both provide practical and efficient representations for computing the momentum-space potential that do not require integration or interpolation. Programs based on both expansions are available as supplementary material. Analytic expressions are given for the scalar coefficient functions of the Fourier transform of the electromagnetic part of the Argonne V18. A simple method for computing the partial-wave projections of these interactions from the operator expressions is also given.

Comments:	61 pages. 26 figures
Subjects:	**Nuclear Theory (nucl-th)**
Cite as:	**arXiv:1106.1934 [nucl-th]**
	(or **arXiv:1106.1934v1 [nucl-th]** for this version)

Submission history

From: Saravanan Veerasamy [view email]
[v1] Fri, 10 Jun 2011 00:30:26 GMT (286kb)

Which authors of this paper are endorsers?