

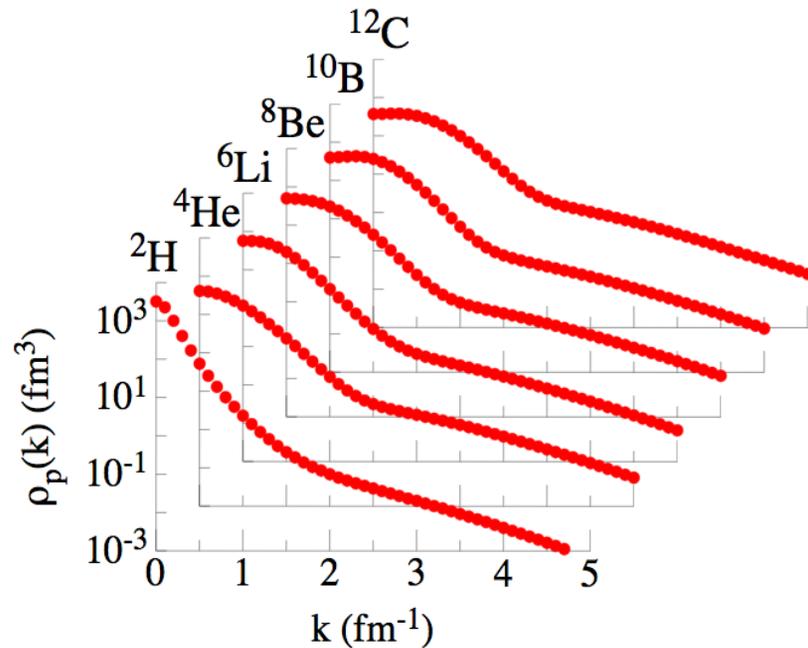
# Nucleon and nucleon-pair momentum distributions in $A \leq 12$ nuclei

## Objectives

- Calculate nucleon, nucleon-pair, & nucleon-cluster momentum distributions in nuclei up to  $A=12$ .
- Provide extensive results to community via web:  
<http://www.phy.anl.gov/theory/research/momenta>

## Impact

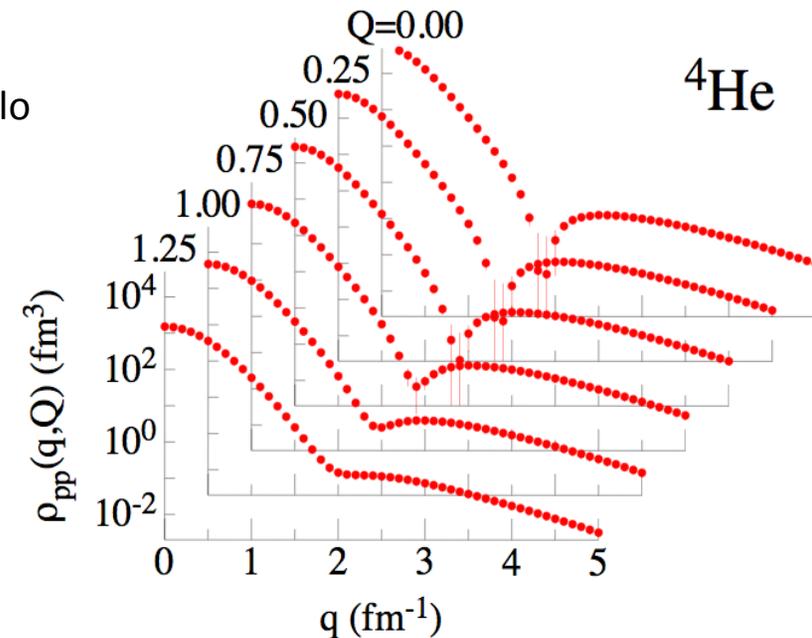
- Momentum distributions reflect short-range correlations in nuclei.
- Relevant for  $(e,e'p)$  and  $(e,e'pN)$  experiments.
- Useful input to  $\nu$ -nucleus event generators.



Proton momentum densities  
 $\rho_p(k)$  for  $T=0$  nuclei

## Accomplishments

- Variational Monte Carlo (VMC) calculations of nucleon momentum distributions in nuclei up to  $A=12$
- Single-nucleon and nucleon-pair distributions exhibit universal features attributable to one-pion-exchange tensor interaction



Two-proton momentum densities  $\rho_{pp}(q,Q)$  for  ${}^4\text{He}$



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Nuclear Computational Low-Energy Initiative

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