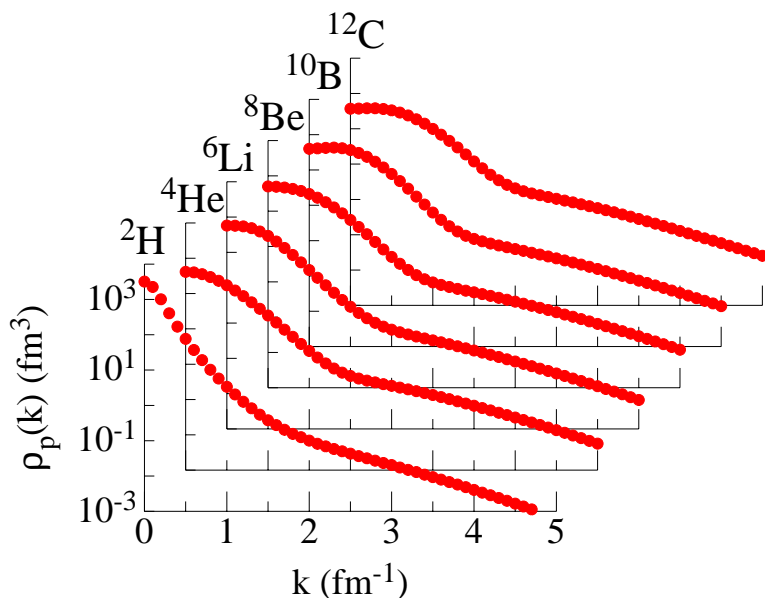


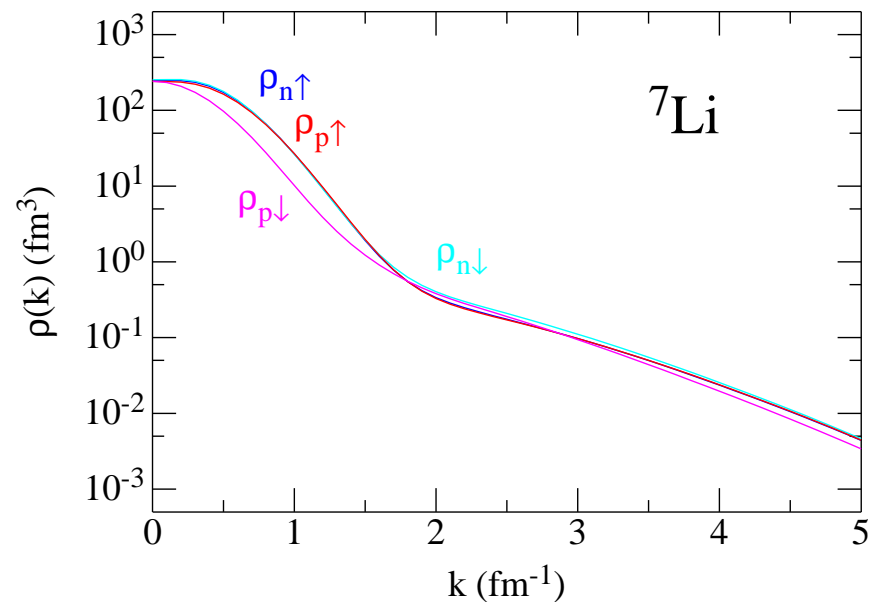
# MOMENTUM DISTRIBUTIONS IN LIGHT NUCLEI

- Momentum distributions of nucleons and nucleon clusters can provide useful insights into various reactions on nuclei, such as  $(e, e'p)$  and  $(e, e'pN)$  electrodisintegration processes
- Variational Monte Carlo calculations have been done for nuclei up to  $A = 12$
- Results show universal properties, with high-momentum tails attributable to tensor and short-range correlations

## Single-nucleon momentum distributions



## Spin-polarized momentum distributions

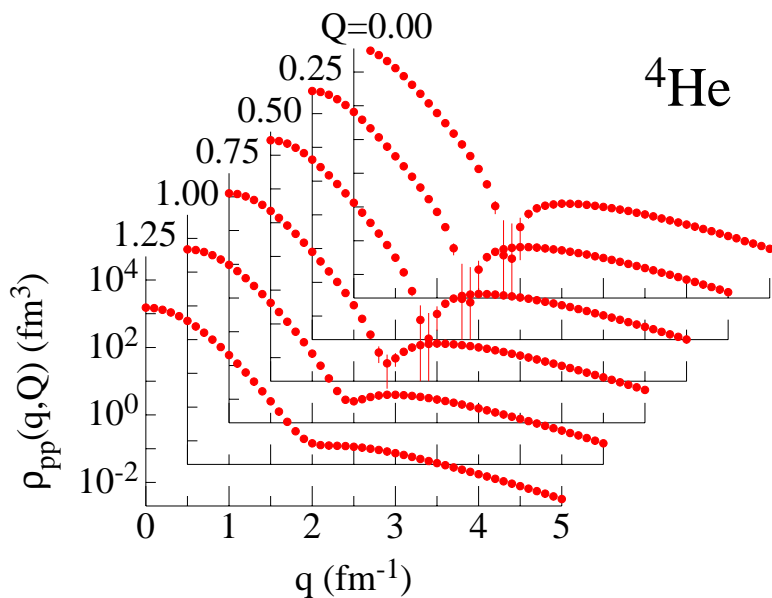


- Available to community via web at [www.phy.anl.gov/theory/research/momenta](http://www.phy.anl.gov/theory/research/momenta)

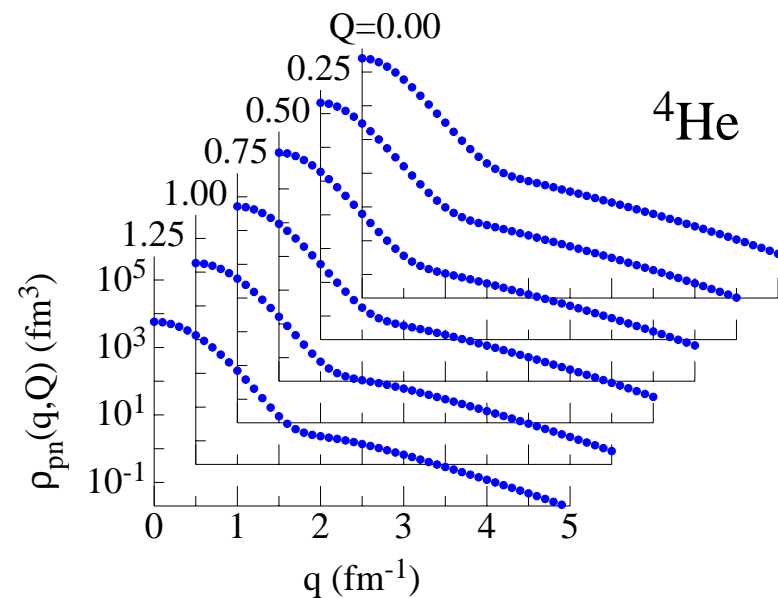
## OPPORTUNITIES AND CHALLENGES

- Two-nucleon momentum distributions help explore role of correlations in nuclei
- Implications for EMC effect, NuTeV anomaly, neutron star transport properties should be investigated

### *pp* momentum distributions



### *np* momentum distributions



- Single-nucleon momentum distribution for  ${}^{16}\text{O}$  has been evaluated in cluster VMC calculation and heavier nuclei should be accessible in the near future