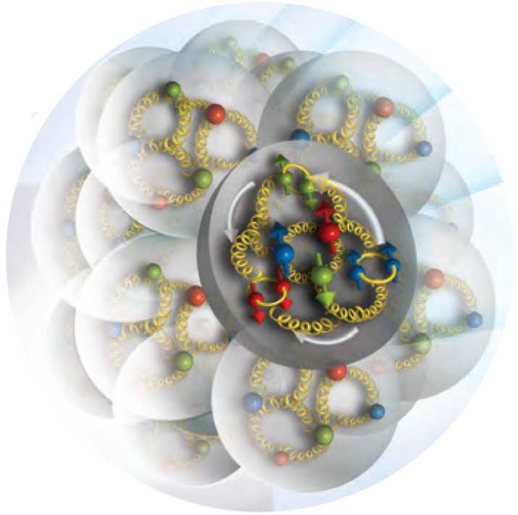
Gluonic Structure of Light Nuclei

Objectives

- Nuclei form the bulk of visible matter
- What is the gluonic structure of nuclei?
- Do gluons contribute in some unique way in nuclei not observed with nucleons?

Impact

- Established the feasibility of a new field within nuclear physics
- First indications of gluonic structure in nuclei
- Provides new justification for proposed deuteron experimental searches of gluonic structure
- Providing theoretical support for a proposed Electron Ion Collider



Accomplishments

- First LQCD study of the gluonic structure of light nuclei
- First moment of unpolarized gluon distribution is studied in nuclei up to A=3
- Found first moment of gluon transversity computied in spin-1 deuteron non-zero - first indication of gluon contributions in nuclei not associated with individual nucleon
- Published F.Winter et al., Phys.Rev.D96(2017) 094512