

# AN EXTENSION OF USQCD SOFTWARE STACK

# PARALLEL DATA STRUCTURES

---

- boolean
- real
- complex
- LQCD specific

# LATTICE LAYOUT

---

- describes data distribution on the cluster
- defines memory layout
- global for application run

# PARALLEL OPERATIONS

---

- arithmetic collective
- left and right shift collectives
- reduction collective
- element read and write

# MULTIPLE LATTICES

---

- Every parallel object associated with a lattice
- Arithmetic ops require args on the same lattice

# PARALLEL OPERATIONS

---

- scatter collective
- gather collective
- other collectives can be expressed via scatter & gather

# IMPLEMENTATION

---

- QDP/C implements multiple lattices
- Qlua in addition implements scatter & gather collectives