

# Kokkos

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graph TD; Kokkos[Kokkos] --> DS[Data Structures]; Kokkos --> PE[Parallel Execution]; DS --> MS[Memory Spaces "Where"]; DS --> ML[Memory Layouts "How"]; DS --> MT[Memory Traits]; PE --> ES[Execution Spaces "Where"]; PE --> EP[Execution Patterns "How"]; PE --> EPOL[Execution Policies];
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## Data Structures

### Memory Spaces (“Where”)

- Multiple-Levels
- Logical Space (think UVM vs explicit)

### Memory Layouts (“How”)

- Architecture dependent index-maps
- Also needed for subviews

### Memory Traits

- Access Intent: *Stream*, Random, ...
- Access Behavior: Atomic
- Enables special load paths: i.e. texture

## Parallel Execution

### Execution Spaces (“Where”)

- N-Level
- Support Heterogeneous Execution

### Execution Patterns (“How”)

- `parallel_for/reduce/scan`, *task spawn*
- Enable nesting

### Execution Policies

- Range, Team, *Task-Dag*
- Dynamic / Static Scheduling
- Support non-persistent scratch-pads