CUDA Quantum Features

Release 0.7

Group	Return Type	Argument Type: void	arithmetic	complex	vector<boo	vector<A>	struct<A>	vector<V>	vector<S>	vector<B>	struct<V>	struct<S>	struct<B>	tuple<B>	pair<B<B>	tuple<B2>	pair<B2>	Quantum
	void	✓	✓	↻	✓	✓	✓	✓	✓	✓	✓	✓	✓	↻	↻	↻	↻	✓
A	arithmetic	✓	✓	↻	✓	✓	✓	✓	✓	✓	✓	✓	✓	↻	↻	↻	↻	✓
A	complex	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻
V	vector<bool>	✓-	✓-	↻	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	↻	↻	↻	↻	✓-
V	vector<A>	✓-	✓-	↻	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	↻	↻	↻	↻	✓-
S	struct<A...>	✓-	✓-	↻	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	↻	↻	↻	↻	✓-
B	vector<V>	✓-	✓-	↻	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	↻	↻	↻	↻	✓-
B	vector<S>	✓-	✓-	↻	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	↻	↻	↻	↻	✓-
B	vector<B>	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻
B	struct<V>	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻
B	struct<S>	✓-	✓-	↻	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	✓-	↻	↻	↻	↻	✓-
B	struct<B>	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻
B2	tuple<B...>	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻
B2	pair<B,B>	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻
B2	tuple<B2...>	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻
B2	pair<B2,B2>	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻
	Quantum	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

✓	supported
✓-	mostly implemented, but limitations
↻	maybe some implementation, future release
NO	no plan to support in CUDA quantum

Types are partitioned into named groups to simplify the presentation.

- Group A: all arithmetic types, including bool, char, complex, short, int, long, float, double, ...
- Group V: all std::vector<T> where T is in group A
- Group S: all struct/class types where all members are in group A
- Group B: all nested/recursive types of std::vector or struct/class in which all terminal types are in group A
- Group B2: to be folded into group B, but broken out separately for now as there is no support in the compiler