Submatrix Method Toolbox in Julia

• **Goal**
  – develop a Julia library for computing general matrix function
  – use „Submatrix Method“ parallelization and approximation scheme [1]
  – evaluation on large scale HPC systems with CPUs and GPUs

• **Required knowledge**
  – parallel computing, MPI
  – basic Julia
  – linear algebra

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**Diagram:**

- **Diagram Elements:**
  - Matrix $A$
  - Matrix $T_1(A)$
  - Matrix $T_2(A)$
  - Function $f(T_1(A))$
  - Function $f(T_2(A))$
  - Result $f(A)$

**Legend:**

- Blue squares represent submatrices.
- Red squares represent outer submatrices.
- Grey squares represent inner submatrices.

**Submatrix Method Approximation Scheme**

- The diagram illustrates the submatrix method approximation scheme, where matrices are partitioned into submatrices, and functions are applied to these submatrices to approximate the function of the original matrix $f(A)$.