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Optimizing Python data processing for the DESI experiment on the NERSC Cori supercomputer

Goal: speed up DESI (Dark Energy experiment) Python image processing code at NERSC without re-writing in C

Strategies:

- Trim down wasteful MPI
- Re-structure code to store key data rather than repeatedly calling expensive functions
- Identify expensive kernels and JIT compile with Numba (most successful strategy so far!)
- Current speedup: more than 6x

Future work:

- Continue optimizing DESI code primarily through Numba
- Consider future architectures (for example, transitioning workload to GPUs)

