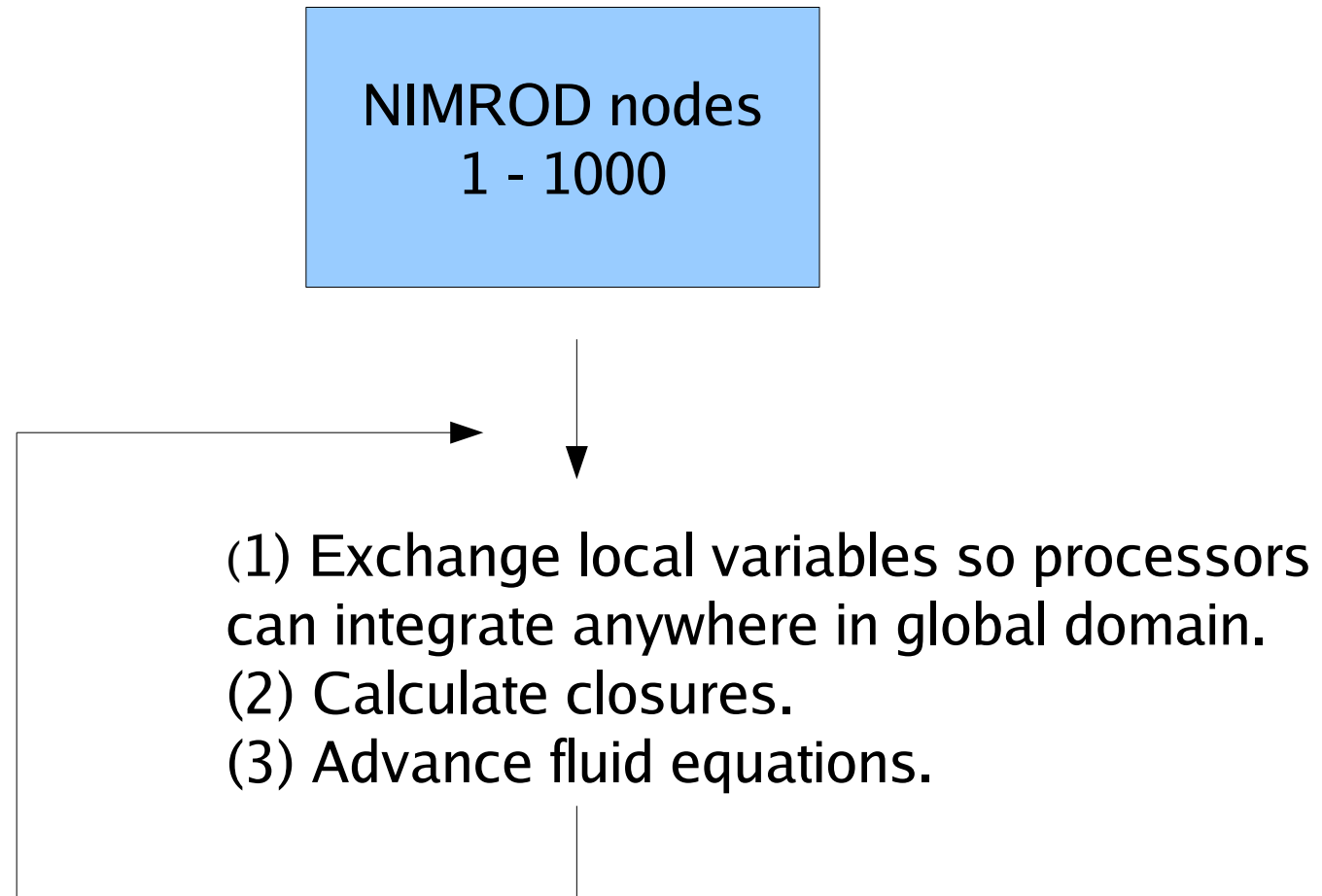


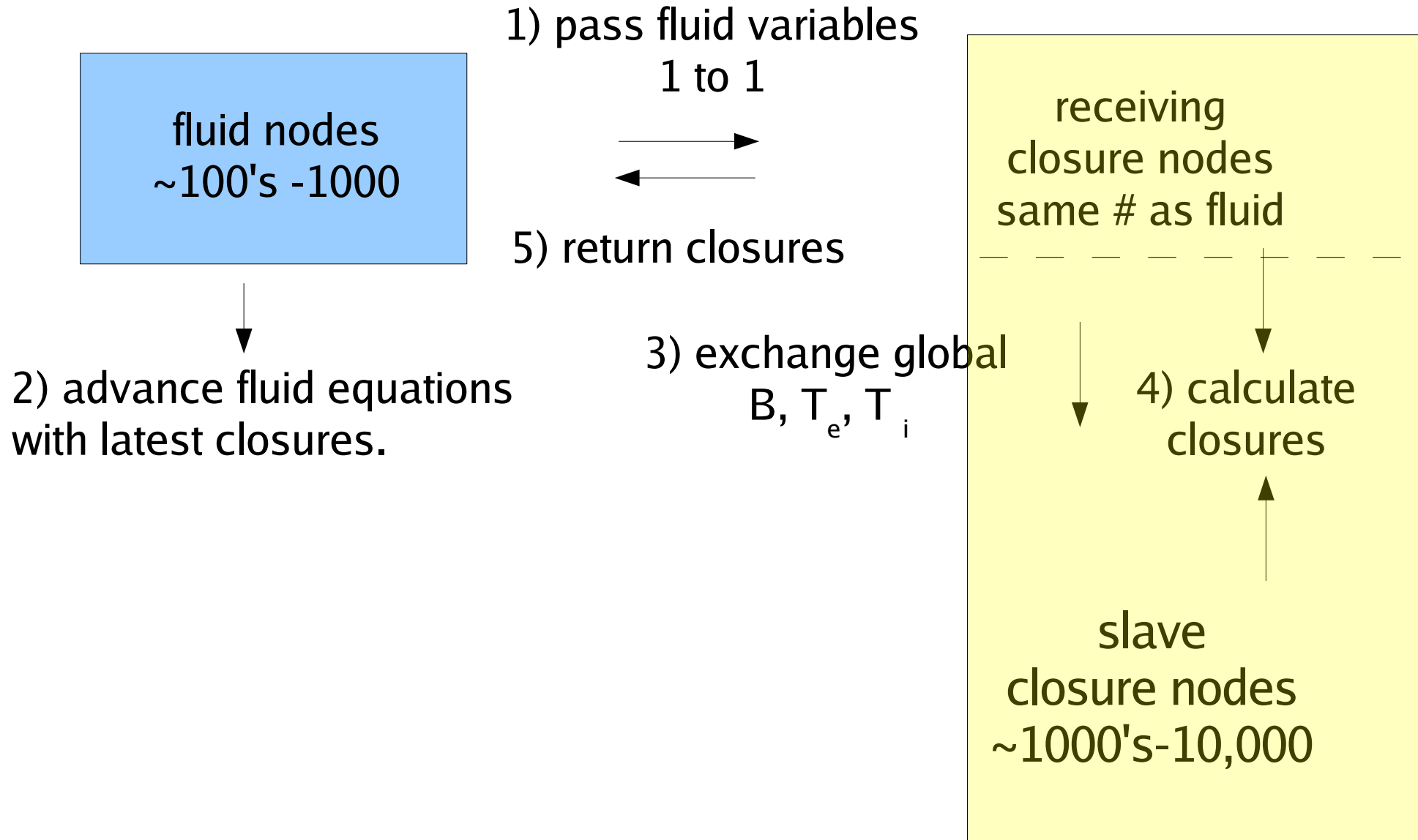
Easy approaches to using 10,000 processors.

- Simultaneously run multiple instances of NIMROD for parameter scans and convergence studies.
 - Accelerates plasma physics studies.
 - Used successfully in RMP heat transport scans with ~ 1000 processors.
- Apply integral parallel closures (q_{\parallel} and Π_{\parallel}) in NIMROD plasma fluid simulations.
 - Calculation of integral parallel closures tantamount to solution of millions of simplified kinetic equation in 1 spatial dimension.

Previous closure implementation had all processors doing both fluid and closure calculations.



Calculate fluid and closure problems on separate groups of processors.



NIMROD with CEL closures scales well from 1000 to 4000 processors.

- Parallelization tested on heat transport problem in slab geometry.
- Single fluid node paired with subset of closure nodes provides communication efficiency.
- Synchronization issues with large group of closure nodes waiting for results from fluid advance..

