PARALLEL CODE: DOMAIN DECOMPOSITION – PROBLEMS

PROBLEM 1: SCIENTIFIC

Maximum number of processors we can
use is **nz**.

Restricts usage of huge machines: e.g. 2048
processors – does a 256 x 256 x 2048
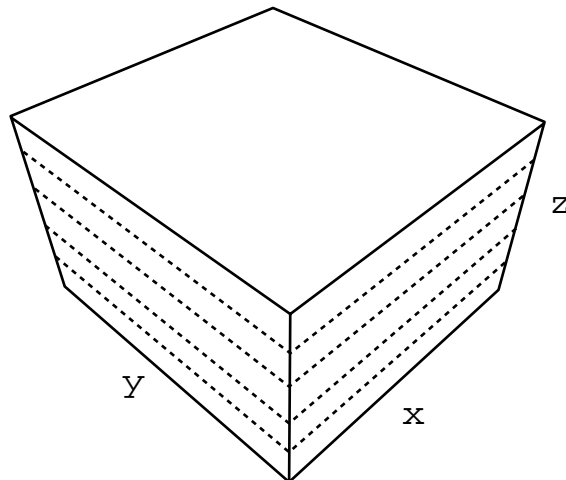problem make sense?

PROBLEM 2: PRACTICAL

Boundary conditions: Remember

$u = (\rho\, u) / \rho$

is a nonlinear quantity!   Is therefore calculated
in configuration space (as illustrated).

If use **nz** processors, must communicate needed
other layers for boundary conditions.

Causes load balancing problems (outer processors
are doing more communication and work than others)

POSSIBLE NEW CODE

"Pencils"

More flexible use of processors.

"On the way" (major re–write)