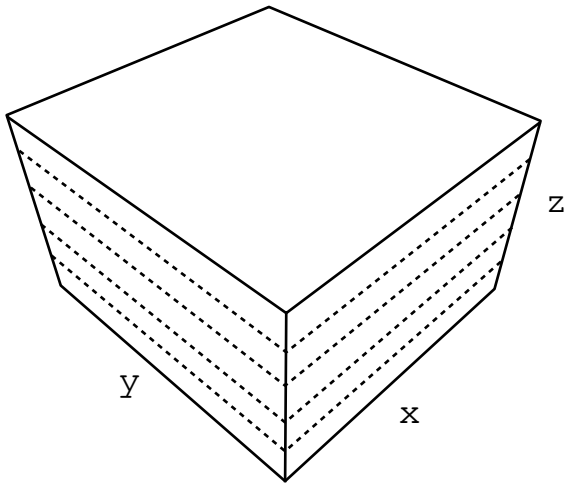
PARALLEL CODE: DOMAIN DECOMPOSITION – PROBLEMS

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

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

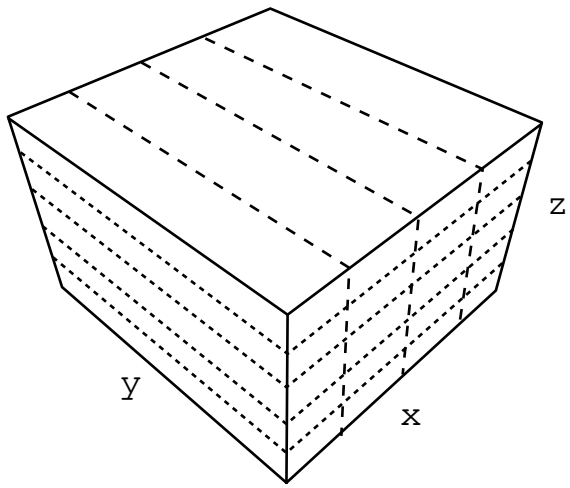
is a nonlinear quantity! Is therefore calculated in configuration space (as illustrated).

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)