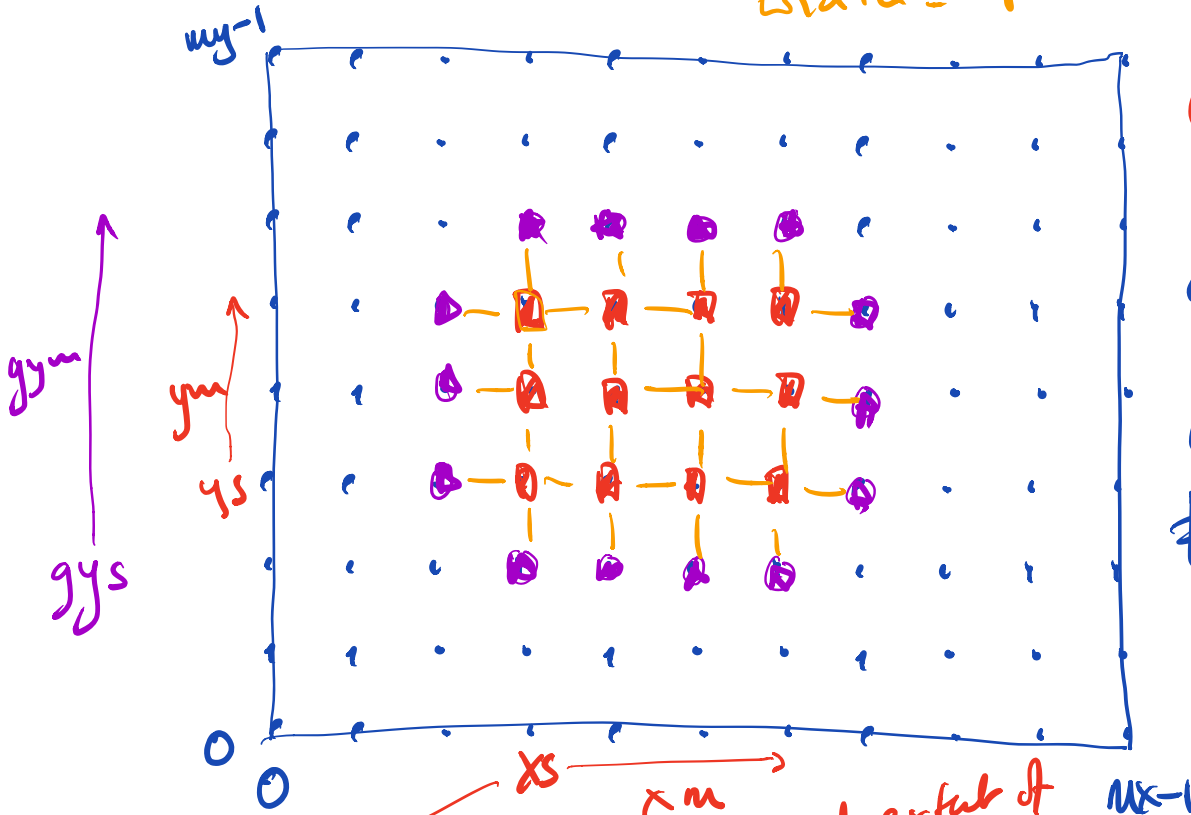
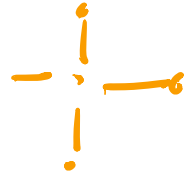


DMDA. Grid management.

Indexing

Stencil = STAR
width = 1



Owned part.
With ghosts
Global grid.

Create:
pts in x
to y
dir chis.

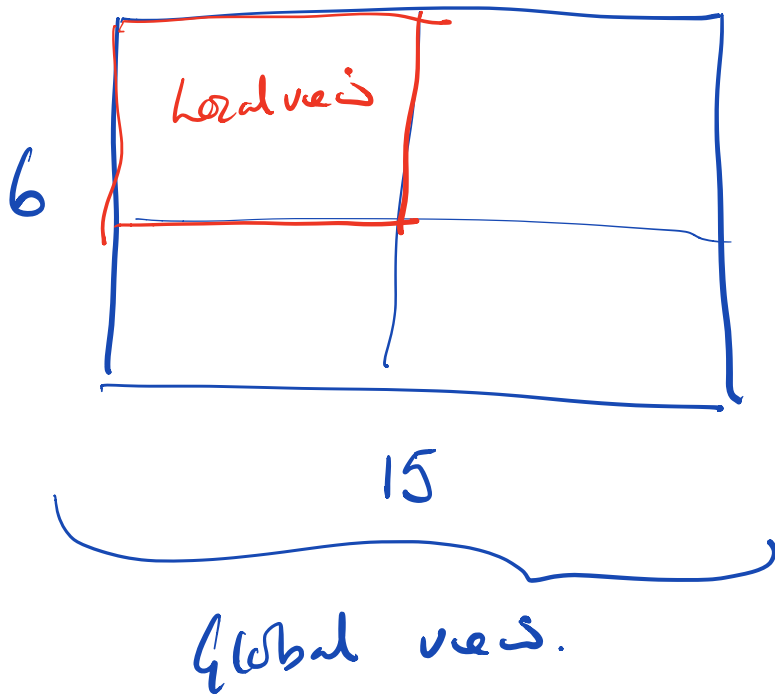
start index of owned regi
g_x_s
start index of ghost regi.
g_x_m
local extent of owned region
x_m
local extent of ghost regi
g_x_m
global extent.
m_x-1

Vector order. z, y, x.

Model: reshape array as
array. reshape(z_m, y_m, x_m)
(for unghosted)

Use g_z_m, g_y_m, g_x_m for ghosted.

DMDA object: rectangular 1D, 2D, or 3D grids



Does MPI parallelism.
Tries to distribute as "square" patches.

Utilities for:

- create global vectors of the right size
- create sparse matrices with non zero pattern according to a particular stencil
- indexing routines
 - "Where is my piece of the global grid".

Can create vectors:

→ global vector has size $xm \times ym$

→ local vector has size $gx \times mx \times gy \times my$.

→ facilitates for scattering between local and global vectors.

for stencil update:

$$\text{computing } y = Ax.$$

shape
(gy, mx)

$x \leftarrow$ global

(gy, gx)


$x_{loc} \leftarrow \text{globaltoLocal}(x)$

for i in range($xs, xs + xm$):

for j in range($ys, ys + ym$):

compute $y[j, i]$.

↑
ordering of dots is "fortran".

→ z, y, x 

Refine next:

Polynomials

between grids.

