Wilberth Castro Fuentes
Programa de Maestría en Ciencias de la Computación
Tecnológico de Costa Rica

I. Definitions

$P : \mathbb{N}$

$n : \mathbb{N};\ m : \mathbb{N}$

$N == 0..n;\ M == 0..m$
$W == 0..,2m + n - 1;\ H == 0..m$

Index
$i : W$
$j : H$
$map_x : W \times H \nrightarrow N$
$map_y : W \times H \nrightarrow M$

$\forall x : W;\ y : H \mid x < m \bullet$
$map_x(x, y) = m - y - 1$
$map_y(x, y) = x + y - m + 1$

$\forall x : W;\ y : H \mid n + m \leq i \bullet$
$map_x(x, y) = 2n + m - x - 1$
$map_y(x, y) = m - y - 1$

$f : N \times M \to \mathbb{Z}$

tBase
$x : N$
$y : M$
$t : N \times M \to \mathbb{Z}$

Value
Index
$\delta : \mathbb{Z}$

II. Stage A

StageA$_1$
Index
tBase

$i < m$

$x = map_x(i, j)$
$y = map_y(i, j)$
$t(x, y) = f(x, y)$

StageA$_3$
Index
tBase

$0 \leq i + j - n - m < \frac{m-1}{2}$
$i < n + m$

$x = i - m$
$y = j$
$t(x, y) = f(x, y)$

StageA$_4$
Index
tBase

$0 \leq i + j - n - m < \frac{m-1}{2}$
$n + m \leq i$

$x = map_x(i, j)$
$y = map_y(i, j)$
$t(x, y) = f(x, y)$

III. Stage B

StageB$_1$
Value
StageA$'_1$

$m \leq i < 2m - j$

$x' = x = i - m$
$y' = y = j$
$\delta = t'(x', y')$

StageB$_2$
Value

$2m - j \leq i < n + m - j$

$x = i - m$
$y = j$
$\delta = f(x, y)$

StageB$_3$
Value
StageA$'_3$

$\frac{m-1}{2} \leq i + j - n - m$
$n + m \leq i$

$x' = x = map_x(i, j)$
$y' = y = map_y(i, j)$
$\delta = t'(x', y')$

StageB$_4$

Value
StageA$'_4$

$\frac{m-1}{2} \leq i + j - n - m$
$i < n + m$

$x' = x = i - m$
$y' = y = j$
$\delta = t'(x', y')$

IV. Wavefront Sp

$$\forall p : P;\ j : H;\ i : W \mid$$
$$p = j \bmod P \wedge$$
$$m - j - 1 \leq i < 2m + n - j - 1 \bullet$$
$$\mathit{StageA}_1 \dot{\vee} \mathit{StageB}_1$$
$$\mathit{StageB}_2$$
$$\mathit{StageA}_3 \dot{\vee} \mathit{StageB}_3$$
$$\mathit{StageA}_4 \dot{\vee} \mathit{StageB}_4$$