1 Equation Coefficients

1.1 A_{11} Equation

$A_{11_{i,j}}\ \omega =$	
p_i	0
$v_{1_{i,j}}$	$-A_{11,x_{10}}$
$v_{1_{i+1,j}}$	$2A_{11_0}\frac{1}{2\Delta x}$
$v_{1_{i-1,j}}$	$-2A_{11_0}\frac{1}{2\Delta x}$
$v_{1_{i,j+1}}$	$2A_{12_0}\frac{1}{2\Delta y}$
$v_{1_{i,j-1}}$	$-2A_{12_0}\frac{1}{2\Delta y}$
$v_{2_{i,j}}$	$-A_{11,x_{20}}$
$A_{11_{i,j}}$	$2v_{1,x_{10}} - 1 - \alpha(2A_{11_0} - 2)$
$A_{11_{i+1,j}}$	$-v_{1_0}\frac{1}{2\Delta x}$
$A_{11_{i-1,j}}$	$v_{1_0}\frac{1}{2\Delta x}$
$A_{11_{i,j+1}}$	$-v_{2_0}\frac{1}{2\Delta y}$
$A_{11_{i,j-1}}$	$v_{2_0}\frac{1}{2\Delta y}$
$A_{12_{i,j}}$	$2v_{1,x_{20}} - \alpha(2A_{12_0})$
$A_{22_{i,j}}$	0

1.2 A_{12} Equation

$A_{12_{i,j}}\ \omega =$	
$p_{i,j}$	0
$v_{1_{i,j}}$	$-A_{12,x_{10}}$
$v_{1_{i+1,j}}$	$2A_{12_0}\frac{1}{2\Delta x}$
$v_{1_{i-1,j}}$	$-2A_{12_0}\frac{1}{2\Delta x}$
$v_{1_{i,j+1}}$	$2A_{22_0}\frac{1}{2\Delta y}$
$v_{1_{i,j-1}}$	$-2A_{22_0}\frac{1}{2\Delta y}$
$v_{2_{i,j}}$	$-A_{12,x_{20}}$
$v_{2_{i+1,j}}$	$2A_{11_0}\frac{1}{2\Delta x}$
$v_{2_{i-1,j}}$	$-2A_{11_0}\frac{1}{2\Delta x}$
$v_{2_{i,j+1}}$	$2A_{12_0}\frac{1}{2\Delta y}$
$v_{2_{i,j-1}}$	$-2A_{12_0}\frac{1}{2\Delta y}$
$A_{11_{i,j}}$	$v_{2,x_{10}} - \alpha(A_{12_0})$
$A_{12_{i,j}}$	$v_{1,x_{10}} + v_{2,x_{20}} - 1 - \alpha(A_{11_0} + A_{22_0} - 2)$
$A_{12_{i+1,j}}$	$-v_{1_0}\frac{1}{2\Delta x}$
$A_{12_{i-1,j}}$	$v_{1_0}\frac{1}{2\Delta x}$
$A_{12_{i,j+1}}$	$-v_{2_0}\frac{1}{2\Delta y}$
$A_{12_{i,j-1}}$	$v_{2_0}\frac{1}{2\Delta y}$
$A_{22_{i,j}}$	$v_{1,x_{20}} - \alpha(A_{12_0})$

1.3 A_{22} Equation

$A_{22_{i,j}}$ $\omega =$

$p_{i,j}$	0
$v_{1_{i,j}}$	$-A_{22,x_{10}}$
$v_{2_{i,j}}$	$-A_{22,x_{20}}$
$v_{2_{i+1,j}}$	$2A_{12_0}\frac{1}{2\Delta x}$
$v_{2_{i-1,j}}$	$-2A_{12_0}\frac{1}{2\Delta x}$
$v_{2_{i,j+1}}$	$2A_{22_0}\frac{1}{2\Delta y}$
$v_{2_{i,j-1}}$	$-2A_{22_0}\frac{1}{2\Delta y}$
$A_{11_{i,j}}$	0
$A_{12_{i,j}}$	$2v_{2,x_{10}} - \alpha(2A_{12_0})$
$A_{22_{i,j}}$	$2v_{2,x_{20}} - 1 - \alpha(2A_{22_0} - 2)$
$A_{22_{i+1,j}}$	$-v_{1_0}\frac{1}{2\Delta x}$
$A_{22_{i-1,j}}$	$v_{1_0}\frac{1}{2\Delta x}$
$A_{22_{i,j+1}}$	$-v_{2_0}\frac{1}{2\Delta y}$
$A_{22_{i,j-1}}$	$v_{2_0}\frac{1}{2\Delta y}$

1.4 x_1 Momentum Equation

$El^{-1}v_{1_{i,j}}$ $\omega =$

$p_{i+1,j}$	$-\frac{1}{2\Delta x}$
$p_{i-1,j}$	$\frac{1}{2\Delta x}$
$v_{1_{i,j}}$	$-El^{-1}v_{1,x_{10}} - 2\beta\left(\frac{1}{\Delta x^2} + \frac{1}{\Delta y^2}\right)$
$v_{1_{i+1,j}}$	$-El^{-1}v_{1_0}\frac{1}{2\Delta x} + \beta\frac{1}{\Delta x^2}$
$v_{1_{i-1,j}}$	$El^{-1}v_{1_0}\frac{1}{2\Delta x} + \beta\frac{1}{\Delta x^2}$
$v_{1_{i,j+1}}$	$-El^{-1}v_{2_0}\frac{1}{2\Delta y} + \beta\frac{1}{\Delta y^2}$
$v_{1_{i,j-1}}$	$El^{-1}v_{2_0}\frac{1}{2\Delta y} + \beta\frac{1}{\Delta y^2}$
$v_{2_{i,j}}$	$-El^{-1}v_{1,x_{20}}$
$A_{11_{i+1,j}}$	$\frac{1}{2\Delta x}$
$A_{11_{i-1,j}}$	$-\frac{1}{2\Delta x}$
$A_{12_{i,j+1}}$	$\frac{1}{2\Delta y}$
$A_{12_{i,j-1}}$	$-\frac{1}{2\Delta y}$
$A_{22_{i,j}}$	0

1.5 x_2 Momentum Equation

$El^{-1}v_{2_{i,j}}$ $\omega =$

$p_{i,j+1}$	$-\frac{1}{2\Delta y}$
$p_{i,j-1}$	$\frac{1}{2\Delta y}$
$v_{1_{i,j}}$	$-El^{-1}v_{2,x_{10}}$
$v_{2_{i,j}}$	$-El^{-1}v_{1,x_{10}} - 2\beta\left(\frac{1}{\Delta x^2} + \frac{1}{\Delta y^2}\right)$
$v_{2_{i+1,j}}$	$-El^{-1}v_{1_0}\frac{1}{2\Delta x} + \beta\frac{1}{\Delta x^2}$
$v_{2_{i-1,j}}$	$El^{-1}v_{1_0}\frac{1}{2\Delta x} + \beta\frac{1}{\Delta x^2}$
$v_{2_{i,j+1}}$	$-El^{-1}v_{2_0}\frac{1}{2\Delta y} + \beta\frac{1}{\Delta y^2}$
$v_{2_{i,j-1}}$	$El^{-1}v_{2_0}\frac{1}{2\Delta y} + \beta\frac{1}{\Delta y^2}$
$A_{11_{i,j}}$	0
$A_{12_{i+1,j}}$	$\frac{1}{2\Delta x}$
$A_{12_{i-1,j}}$	$-\frac{1}{2\Delta x}$
$A_{22_{i,j+1}}$	$\frac{1}{2\Delta y}$
$A_{22_{i,j-1}}$	$-\frac{1}{2\Delta y}$

1.6 Mass Equation

$\varepsilon p_{i,j}$ $\omega =$

$p_{i,j}$	0
$v_{1_{i+1,j}}$	$\frac{1}{2\Delta x}$
$v_{1_{i-1,j}}$	$-\frac{1}{2\Delta x}$
$v_{2_{i,j+1}}$	$\frac{1}{2\Delta y}$
$v_{2_{i,j-1}}$	$-\frac{1}{2\Delta y}$
$A_{11_{i,j}}$	0
$A_{12_{i,j}}$	0
$A_{22_{i,j}}$	0