ME543

Assignment 3

Abhijeet

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$$\frac{\partial^2\psi}{\partial x^2}+\frac{\partial^2\psi}{\partial y^2}=-\omega$$

$$u\frac{\partial\omega}{\partial x}+v\frac{\partial\omega}{\partial y}=\frac{1}{\mathrm{Re}}\left(\frac{\partial^2\omega}{\partial x^2}+\frac{\partial^2\omega}{\partial y^2}\right)$$

$$u=\frac{\partial\psi}{\partial y}\,,\quad v=-\frac{\partial\psi}{\partial x}$$

Re=100. **Re=400**

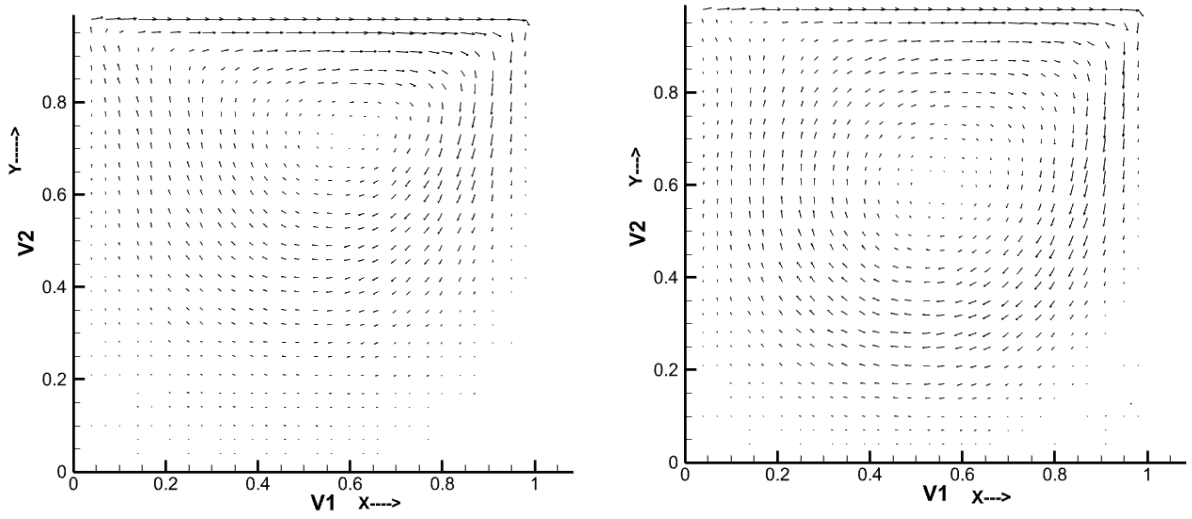

Fig:- velocity vector field

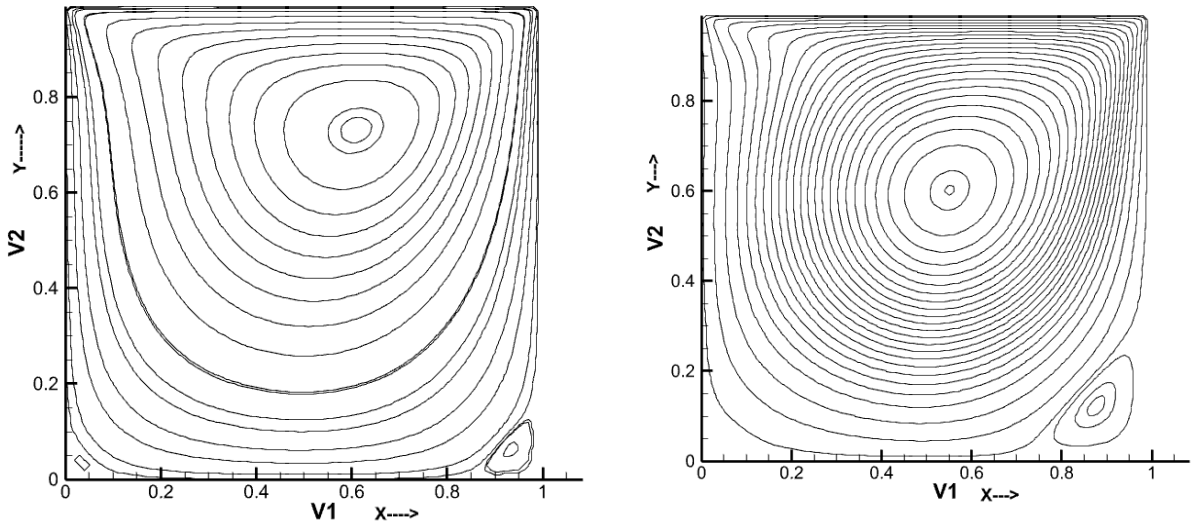

Fig:- Stream Lines

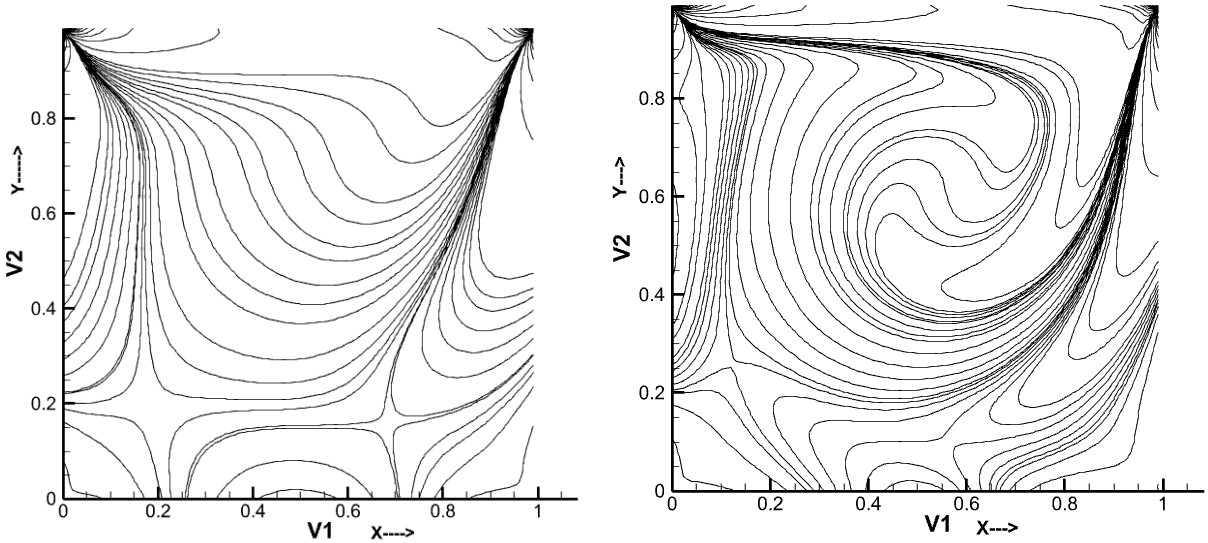

Fig:- Vorticity

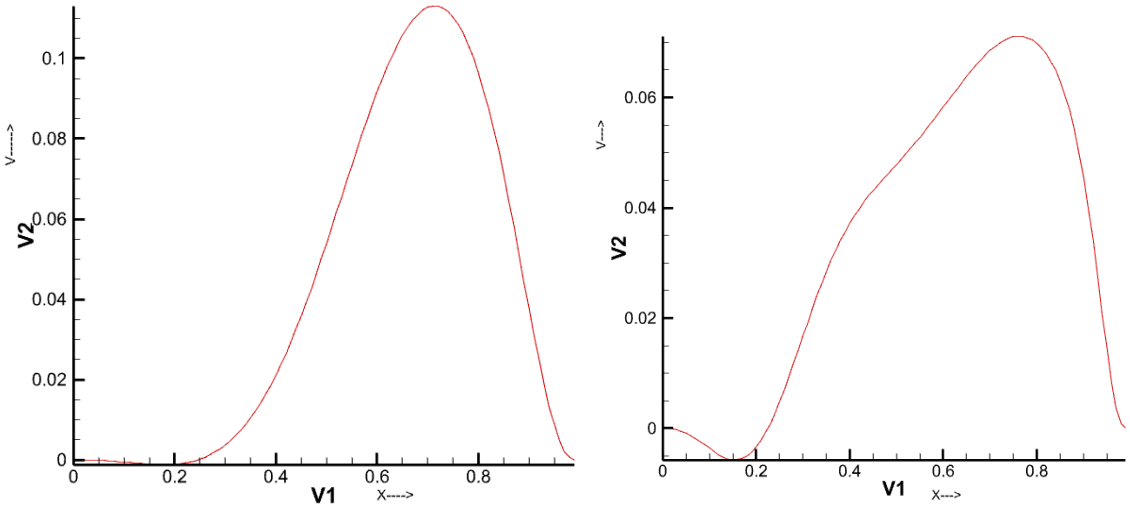

Fig:- V- velocity(at mid-point)

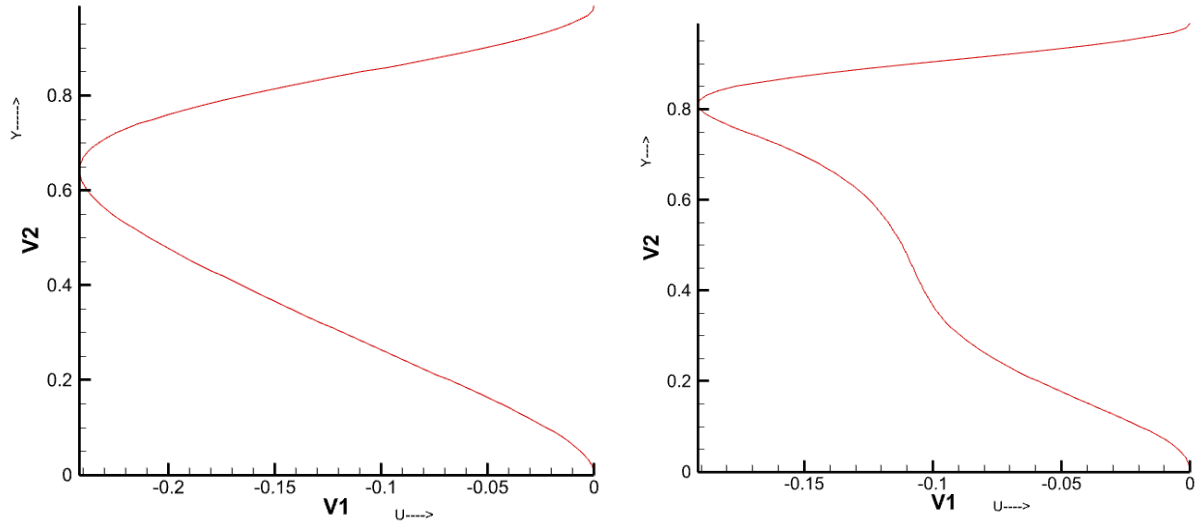

Fig:- U- velocity(at mid-point)