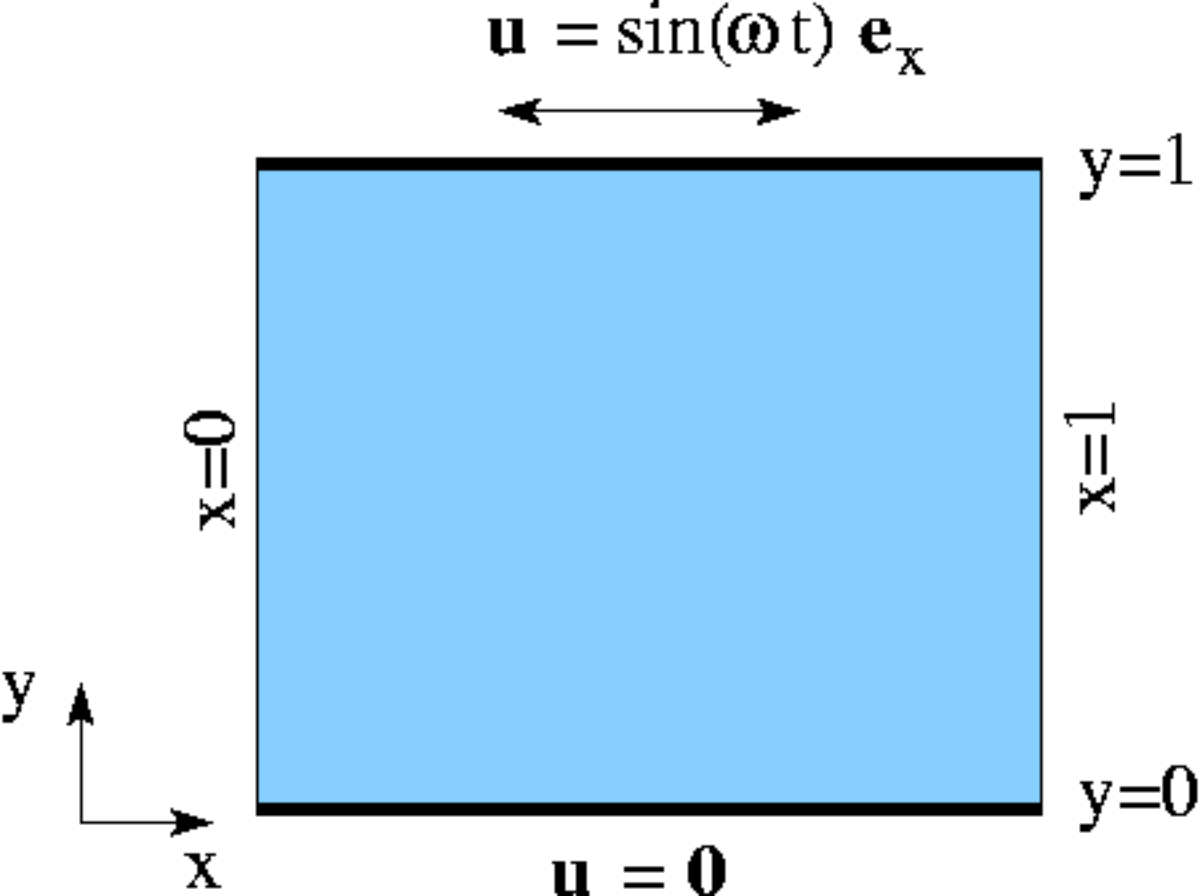
$\mathbf{u} = \sin(\omega t)\ \mathbf{e}_x$
y=1
x=0
x=1
y
x
y=0
$\mathbf{u} = \mathbf{0}$