NOTATIONS

Following Symbols are Used:

A  Cross sectional area of flow
At Cross sectional area of flow in time t
a  Position of wave front in Whitham’s Analysis
b  Bed width of the channel
C  Celerity of wave propagation
CNx Courant Number in x-direction
CNy Courant Number in y-direction
Cz Chezy’s co-efficient
dx Small increment in x-direction
dy Small increment in y-direction
dt Small increment in time level
E  Flux matrix in x-direction
EP Predicted flux matrix in x-direction
Ex Partial derivative of E with respect to x
F  Flux matrix in y-direction
FP Predicted flux matrix in y-direction
Fy Partial derivative of F with respect to y
f  Coriolis parameter
g  Acceleration due to gravity
h  Flow depth in vertical direction
H  Depth direction in three dimensional plot
i Represents node position in x-direction
j Represents node position in y-direction
K Conveyance factor
K Constant of proportionality in Whitham’s analysis
M Number of grids in x-direction.
N Number of grids in y-direction.
n Manning’s Roughness co-efficient
Q Flow discharge
Qt Flow discharge in time “t”
q Unit discharge
q_i Unit discharge in lateral direction
r Radial distance from breach point
S Matrix containing sink or source term
SP Predicted S matrix
S_f Friction slope
S_b Bed slope
S_{ox} Bed slope in x-direction
S_{oy} Bed slope in y-direction
T Non-dimensional time
t Time
U Matrix containing first terms of Continuity and Momentum Equations
UP Predicted U matrix
UC Corrected U matrix
UN U matrix at new time level
Partial Derivative of $U$ with respect to time 't'

Flow velocity in x-direction

Depth averaged flow velocity in x-direction

Depth averaged flow velocity in y-direction

Depth averaged flow velocity in one-dimensional flow

Velocity of wave front

Tip velocity

Depth averaged flow velocity in radial direction

Flow velocity in y-direction

Velocity of wave front

Non-dimensional distance in x-direction

Distance in x-direction

Distance up to tip position

Distance along a radial direction

Distance along y-direction

Flow depth

Depth of the centroid of flow area

Time step in Finite Difference scheme

Space difference in x-direction in Finite Difference scheme

Space difference in y-direction in Finite Difference scheme

Constant of proportionality in the equation of breach rate

Exponent in the equation of breach rate

Exponent in the simplified momentum equation

Fluid density
\( \theta \)  Angle made by resultant velocity with x-direction
\( \eta \)  Vertical distance from channel bottom
\( \sigma \)  Width of flow at a distance \( \eta \) from the channel bottom
\( \zeta \)  Elevation of Flow surface
\( \tau \)  Shear stress
\( \varepsilon_z \)  Variable eddy viscosity co-efficient.