

## fd\_explicit\_bs

Input parameters:

- TimeStepNumber  $N$

Output parameters:

- Price
- Delta

**/\*Memory Allocation\*/**

**/\*Space localisation\*/**

Define the integration domain  $D = [-l, l]$  using inequality [there](#).

**/\*Space Step\*/**

Define the space step  $h = \frac{2l}{M}$ .

**/\*Peclet Condition\*/**

If  $|r - \delta|/\sigma^2$  is not small, then a more stable finite difference approximation is used. [there](#).

**/\*Stability Condition Time Step\*/**

This stability condition is given [there](#) The Time Step number is given by  $M$ .

**/\*"Probabilities" associated to point\*/**

cf. [there](#)

**/\*Terminal Values\*/**

Put the value of the payoff saved in *Obst* into a vector  $P$  which will be used to save the option value.

**/\*Finite difference Cycle\*/**

At any time step, described by the loop in the variable *TimeIndex*, we have to solve explicitly the equation cf. [there](#)

**/\*Splitting for American case\*/**

For American options, we compare at each time step the solution in *S* with the payoff function saved in *Obst*. We save the result in *P* [there](#).

**/\*Price\*/**

**/\*Delta\*/**

**/\*Memory Desallocation\*/**