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## fd\_psor2d

Input parameters:

- SpaceStepNumber  $N$
- TimeStepNumber  $M$
- Omega  $1 \leq \omega \leq 2$
- Epsilon

Output parameters:

- Price
- Delta1
- Delta2

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

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

Define the integration domain  $D = [-l, l]^2$  using probabilistic estimation.

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

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

**/\*Time Step\*/**

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

Put the value of the payoff into a vector  $P$

**/\*Homegenous Dirichlet Conditions/\***

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

At any time step, described by the loop in the variable *TimeIndex*, we have to solve the linear system with Psor Algorithm (cf. [there](#))

**/\*Psor Cycle/\***

**/\*Projection for American case\*/**

For American options, we compare at each time step the solution in  $P$  with the payoff function saved in *iv*. We save the result in  $P$

**/\*Price\*/**

**/\*Delta\*/**

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