

Hyperbolic tangent function "two side"

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Description:

Function with an extremum.

Cell size is refined at left and right tips of the segment.

Namelist :

```
&MESH_FUNCTION_DATA  Function_Name="TANH_TWO_SIDES"  ,
                        Number_of_Cells= 32  ,
                        Length= 1.0  ,
                        Left_Cell_Size= 2.0d-02  ,
                        Right_Cell_Size= 3.0d-02  ,
                        Reverse_Ordering= .false.  /
```

Cell size distribution $h(l)$:

L is the Length.

N is the Number_of_Cells.

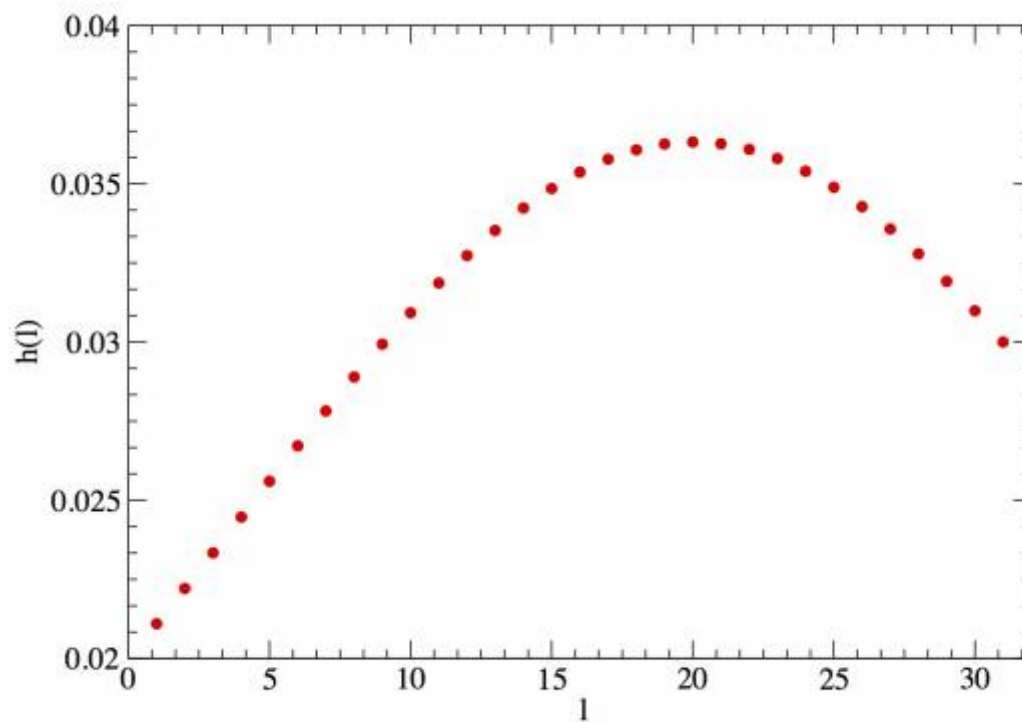
$\alpha(l)$ is function of Left_Cell_Size and Right_Cell_Size.

$x(l)$ is the coordinate.

$h(l)$ is the cell size.

l is the cell index.

$$\begin{aligned} x(1) &= 0 \quad F(l) = \frac{1}{2} \left(1 + \tanh \left(\alpha(l) \frac{l-1}{N} \right) \right) \\ \frac{1}{2} \left(1 + \tanh \left(\frac{1}{2} \alpha(l) \right) \right), \quad 2 \leq l \leq N+1 \quad x(l) &= L \cdot \left(\frac{F(l)}{\alpha(l)} + (1 - \alpha(l)) F(l) \right) \\ x(N+1) &= L \quad h(l) = x(l+1) - x(l) \end{aligned}$$



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