算法 1: 基于仿真模拟在拟合平面上求解漏测面积

Input: $depth, x, y, \theta$

矩阵$depth$表示海水深度数据

矩阵x, y分别表示海水深度数据对应的横纵坐标

θ表示多波束换能器的开角

Output: ans

ans表示漏测海区占总待测海域面积的百分比

begin

// 算F平面漏测面积

sum $= 0$;

for $i \leftarrow 201$ **to** 251 **do**

$\alpha_{i,201} = \arctan \frac{depth_{i,201} - depth_{i,200}}{0.1}$

$WR_{i,201} = \frac{depth_{ij}}{\sin(\frac{\pi}{2} + \alpha_{i,201} - \frac{\theta}{2})} \sin \frac{\theta}{2}$

$WL_{i,201} = \frac{depth_{ij}}{\sin(\frac{\pi}{2} - \alpha_{i,201} - \frac{\theta}{2})} \sin \frac{\theta}{2}$

$W_{i,201} = WR_{i,201} + WL_{i,201}$

for $j \leftarrow 151$ **to** 201 **do**

$\alpha_{i,j} = \arctan \frac{depth_{i,j} - depth_{i,j-1}}{0.1}$

$WR_{i,j} = \frac{depth_{ij}}{\sin(\frac{\pi}{2} + \alpha_{i,j} - \frac{\theta}{2})} \sin \frac{\theta}{2}$

$WL_{i,j} = \frac{depth_{ij}}{\sin(\frac{\pi}{2} - \alpha_{i,j} - \frac{\theta}{2})} \sin \frac{\theta}{2}$

$W_{i,j} = WR_{i,j} + WL_{i,j}$

end

end

$ans = \frac{(4-2.5)*(5-4)*1852^2 - sum}{(4-2.5)*(5-4)*1852^2}$;

return ans

end