

重力 & 浮升力的定义

浮升力 (buoyant force) 是流体在重力作用下由于流体中各部分密度的不均匀而引起的一种体积力。

Star-CD 中:

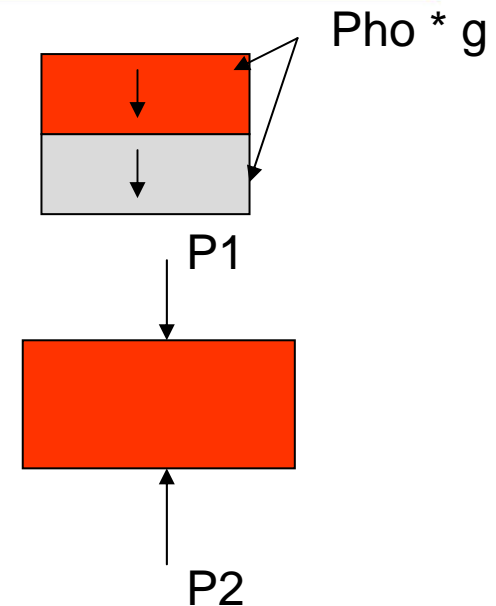
Buoyant forces $S_i = g * (\rho - \rho_0)$

unit volume $= g * v * (\rho - \rho_0)$

物理意义:

相对于参考重力下, 由于重力不同而形成的源项的差异。


- $G = \rho * v * g$
- $F = (p_2 - p_1)A = \rho * v * g = G$



Gravity

Acceleration m/s²

Direction

Coordinate System


Direction of Gravity Force

X Y Z

单相计算时

- 1. 设定密度随温度或压力的变化关系
- 2. 打开浮升力计算模型

Molecular Properties

Define user material

User-Defined Material

Name

Density

Molecular Viscosity

Constant mu kg/ms

Specific Heat

Constant Cp J/kgK

Conductivity

Constant k W/mK

Molecular Weight

Mol Wt kg/kmol

Material #

Molecular Properties for AIR

Buoyancy for AIR

☒ Off ☒ On

Define Datum Location

Centroid of pressure reference cell

Pressure reference cell number: 1

Resultant location:

X: 5
Y: 5
Z: 5

Define Datum Density

Specify

Density kg/m³

Material #

多相计算或打开Free Surface模型时

- 1. 打开浮升力计算模型

Buoyancy for AIR

☒ Off
☒ On

Define Datum Location

Centroid of pressure reference cell

Pressure reference cell number: 1

Resultant location:

X: 5
Y: 5
Z: 5

Define Datum Density

Specify

Density 1.205 kg/m³

Material # 1

Apply

Defaults