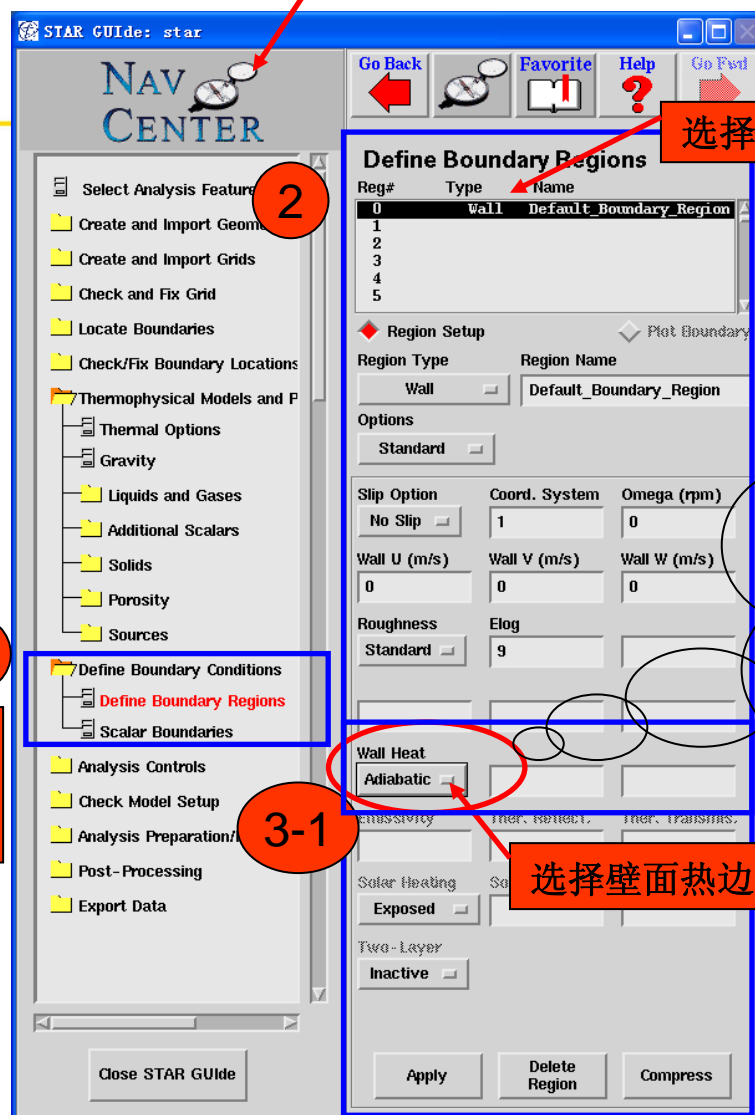


# STAR-CD中的壁面热边界条件

**CDAJ-CHINA**



## STAR-CD的设定面板



选择WALL(壁面)边界条件

第一种条件

绝热 — 不需输入任何参数

**Adiabatic** — No additional input required

1  
选择定义边界条件

3-1

选择壁面热边界条件类型

## 第二种条件

固定值 — 给定如下参数:

(a) 温度 — 给定壁面温度 [K]

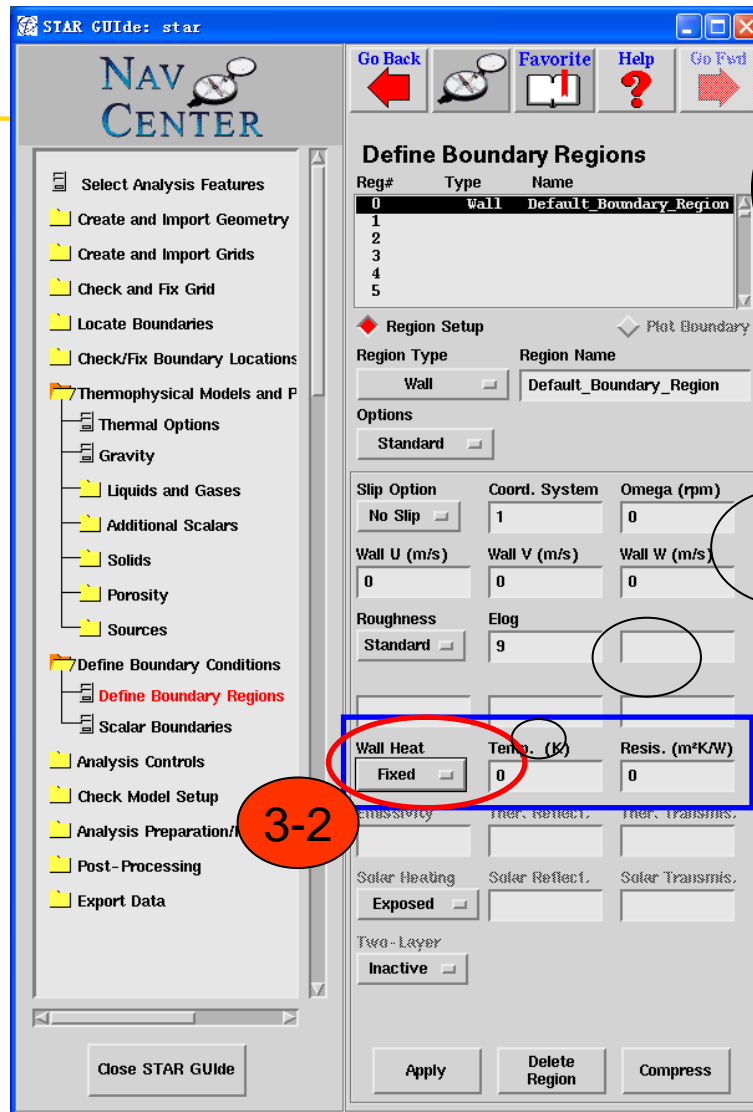
(b) 热阻 — 给定热阻 [ $\text{m}^2 \text{K/W}$ ] (可选). 比如如下的情况可能会用到热阻项: 对于管内流动, 不能给定管内壁的温度, 此时可给定外壁温度和壁的热阻 (基于管的导热系数和厚度); 另一种情况是给定外流体的温度, 将热边界层的热阻和壁的热阻结合. 注意: 通过这种方式给定外部温度和壁的热阻会使得通过壁面的热传递完全为一维计算。

**Fixed** — specify the following:

(a) **Temp.** — fixed wall temperature [K]

(b) **Resis.** — thermal resistance [ $\text{m}^2 \text{K/W}$ ] (*optional*).

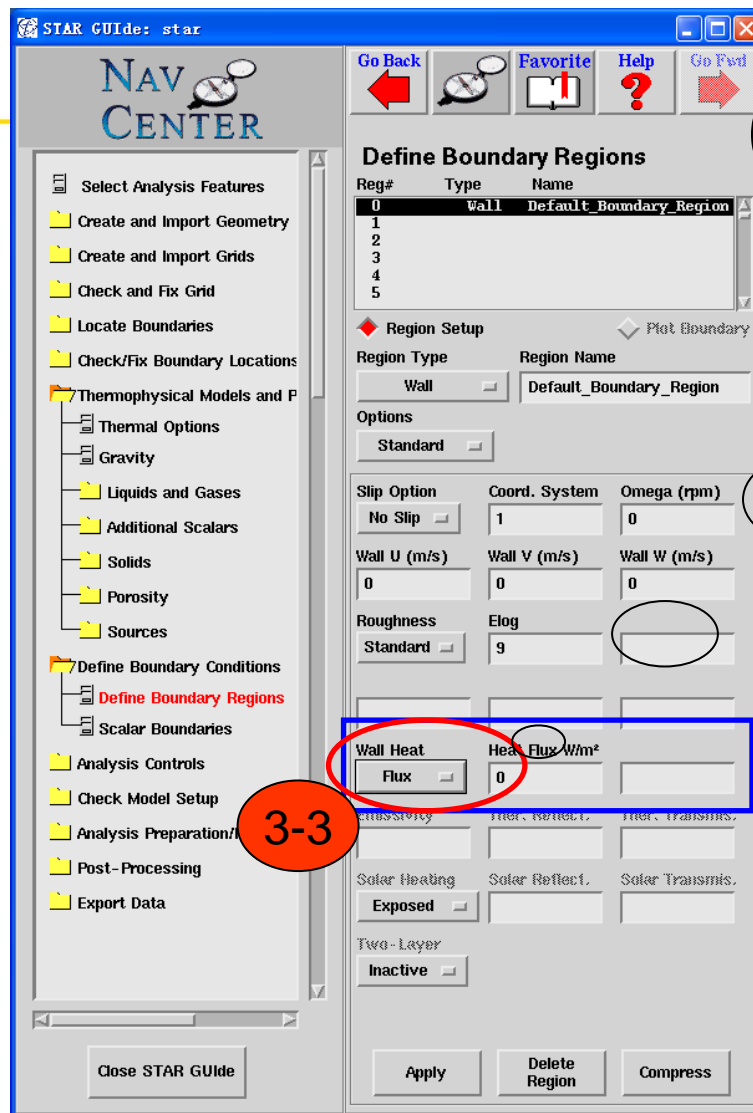
This may be used, for example, in pipe flow where the internal wall temperature is not known. In this situation, one may enter the external pipe temperature and a resistance based on the thickness and thermal conductivity of the pipe. Another possibility is to enter an external fluid temperature and lump the thermal boundary layer resistance with the wall resistance. Note that the use of an external temperature and wall resistance in this manner produces entirely one-dimensional heat transfer through the wall.



### 第三种条件

流量 — (恒定) 壁面热流量 [W/m<sup>2</sup>]

**Flux** — (constant) wall heat flux value [W/m<sup>2</sup>]



## 第四种条件

**传导**—在“*Resis*”框中给定壁面热阻 [ $\text{m}^2 \text{K/W}$ ]. 此值可用来模拟薄层材料的影响, 比如可能存在于壁面的油漆。这一选项只是在进行耦合传热分析而需要充分考虑通过壁的热传导时才使用。

**Conduct.**—use this to supply an additional thermal wall resistance [ $\text{m}^2 \text{K/W}$ ] in the *Resis.* text box. Effectively, this value may be used to model the effect of a thin layer of material, such as paint, that might exist on the wall boundary. This option applies only to conjugate heat transfer analyses that take full account of conduction through the wall.

