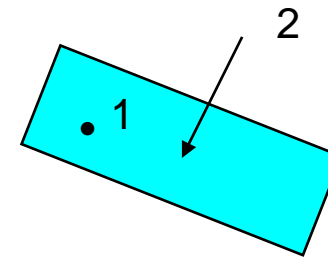


## 在star-cd中求通过某一界面的流量方法

- 后处理中:
  - 1. Method 1: 用截面图 (后处理中) [integrate]
  - 2. Method 2: 做一个shell (后处理中) [fluxsum]
- 计算前
  - 3. Method 3: 用户子程序 (计算前) [posdat.f]
  - 4. Method 4 : 利用 internal 边界 (计算前)

## Method 1: 用截面图 (后处理中)

- **load,casename.pst**
- **getc all**
- **spoint,x,y,z** ! 一设定界面通过的一点 (如1)
- **snor,dx,dy,dz** ! 一设定视图的法线方向 (如2)
- **\*get,flux,tav**
  - (此方法可用gpram命令输出到graph register然后保存成\*.grf文件)
  - (等价于: **inte, cset,,,** 输出窗口中的结果)
- 即得到结果如下, 同时法线方向改变的话, 流量的正负会随之而变。



```
inte cset
INTEGRATE THE POST REGISTER VECTOR OVER THE INTERSECTION
OF THE CURRENT SECTION PLANE WITH THE CURRENT CELL SET
```

AREA INTEGRATED VALUES				
NO.CELL	TOT A	TOT A*VN	TOT A*S	TOT A*VN*S
100	0.999999	-.812209E-01	1.90410	-.146067

以上所求为体积流量,  
若要求质量流量, 则:

```
getc,all,dens
```

```
inte,cset,,
```

```
*get flux,tavs
```

## Method 2: 做一个shell (后处理中)

---

- Load,,
- Getc flux
- ! 基于已有的网格节点生成一个**shell**，可以是平面、曲面等。这里以使用**cfin**命令产生一个**shell**为例，新生成的**shell**存放在**ctab 10**中。
- Ctab,10,shell
- Vset news edge
- Cfin,shell,10,vx
- Flux,cset,10
- 或者，如果此层的网格方向一致的情况（通过**plfa,on**可检查），可以用如下命令：
  - \*get,f2,rtot,2
  - \*get,f4,rtot,4
  - \*get,f6,rtot,6)

## Method 3: 用户子程序 (计算前)

- In user subroutine :

- **F(i,j) ---i=1,2,3**

- F(1,j)---east cell face
- F(2,j) ---north cell face
- F(3,j) ---top cell face

- Please confirm it when using it.

For example:

Q = 0.

DO IP = 1,NCTMXU

IF(ICTID(IP).EQ.1) THEN

Q = Q + F(1,IP)

ENDIF

ENDDO

\*\*Q --为east dir. flux

## Method 4 : 利用internal边界 (计算前)

---

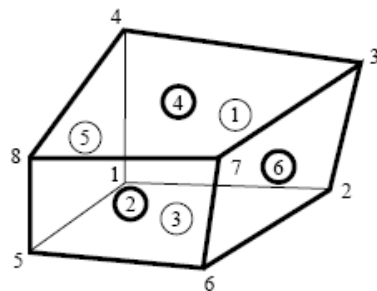
- 定义internal边界，用**monitor engineering behavior > monitor boundary behavior**
- 计算开始后，出现**star.erd**文件，从中得到**mass flux**的值。

## **Appendix: cell 方向、Flux 方向**

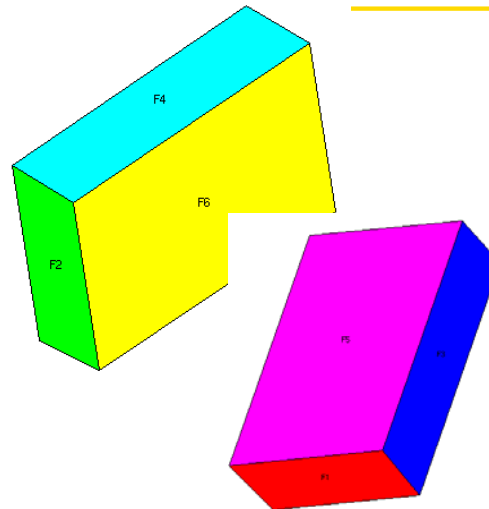
---

- **1. cell 方向**
  - In Prostar
- **2. flux 方向**
  - In Prostar
  - In user-subroutine

# Cell 方向



Hexahedron ((1) = face number)



## Cell orientation and correction

Command: C, 1, 2, 3, 4, 5, 6, 7, 8

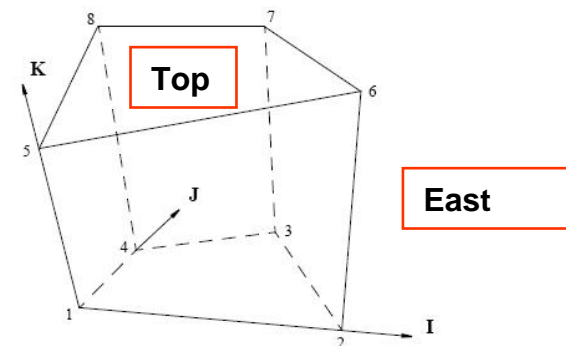


Figure 3-48 Right-handed cell definition

The manner in which cells are defined is important. The constituent vertices must be specified in the correct order so as to obey the *right-handed rule*. This is

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1. 细化方向 I, J, K
2. 面的号数 (cell face number)

F3

Top surf.

F2

North

East

F1

Face 1— V: 1, 2, 3, 4 →

Face 2— V: 5, 6, 7, 8

Face 3— V: 1, 2, 5, 6

Face 4— V: 4, 3, 7, 8

Face 5— V: 1, 4, 8, 5

Face 6— V: 3, 2, 6, 7 →



FACE 1

FACE 2

FACE 3

FACE 4

FACE 5

FACE 6

FACE 7

FACE 8

F1

F2

F3

F4

F5

F6

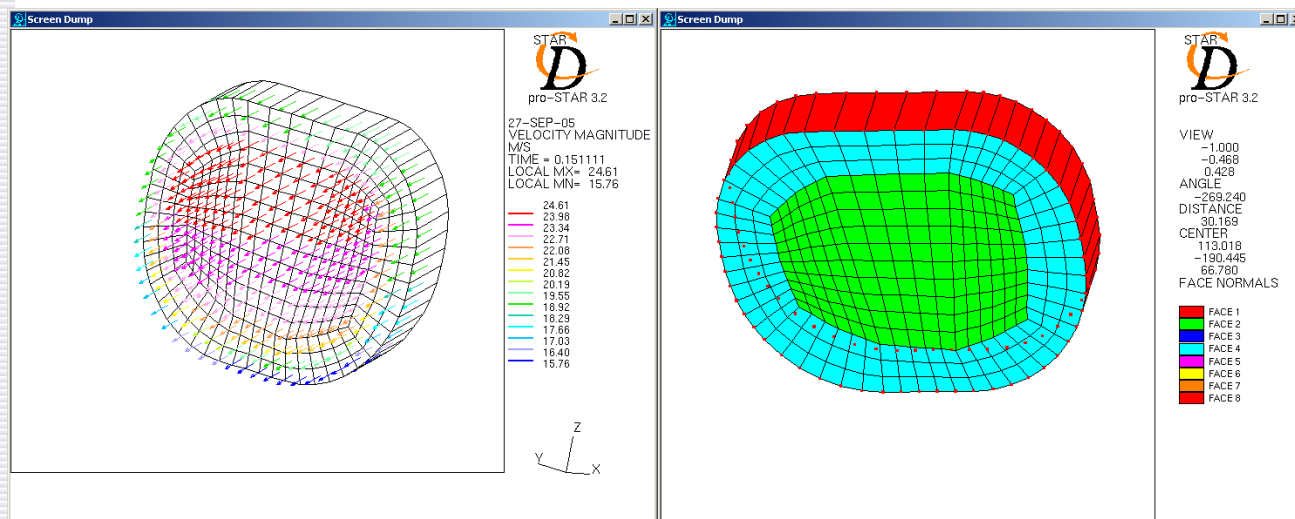
illustrated in Figure 3-48 in terms of an arbitrarily-shaped hexahedral cell. The vertices also define a *cell coordinate system*, unique to each cell, whose I, J and K directions are also shown in that figure. The numerical scheme used to label vertices in Figure 3-43 and Figure 3-46 illustrates the correct right-hand-rule ordering of vertices for all basic cell and baffle/shell shapes. Also shown is the face numbering, which follows the same convention.

Getc,flux

— FLUX. All six mass flux components are loaded simultaneously. The fluxes can then be displayed on an EHIDDEN contour plot and/or summed using the FLUXSUM command. Individual flux components may be loaded using one of /F1/F2/F3/F4/F5/F6/. If any of these flux options are chosen, no SCALAROPT may be used.

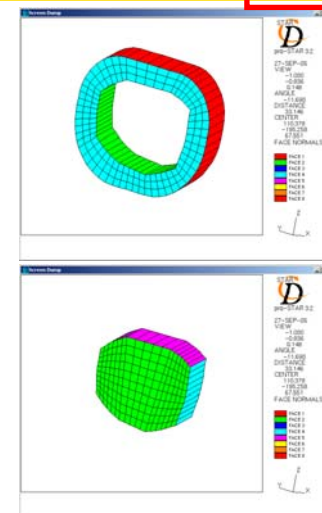
# Flux 方向 --Prostar (1)

sets



Getc, vmag

Plfa on



p11

p12

Method 1 Prostar command:>

```
Getc,flux
setr,intake.set,p11,cell,news
*get,PF1,rtot,4
setr,intake.set,{n2},cell,news
*get,PF2,rtot,2
*set,PF,PF1 + PF2
```

Method 2: using shell

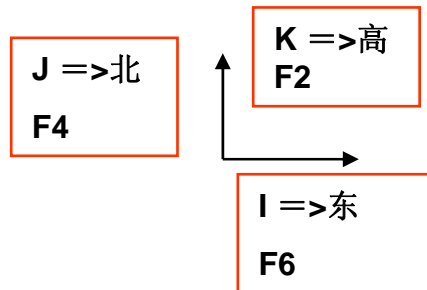
Method 3: using user subroutine similar as method 1.

Etc.



## Flux 方向 --Usub (2)

(1)



**F** mass fraction of (kg/kg)  
 \*of the droplet vapour when input to DROWBC for a single component evaporating droplet  
 \*of the component when input to DRMAST, DRHEAT for an evaporating droplet.

**I**

**F2,F4,F6** mass fluxes at top, north and east cell faces, respectively, of the fluid cell (kg/s)  
 Input to INITFI.

**F(J,I)** mass flux at the J-th cell face of cell ICLMAP(I) (kg/s) (J=1-east cell face, J=2-north cell face, J=3-top cell face)  
 Input to POSDAT.

PROSTAR CELL

(2)

如果想知道六个面的流量，可用star的内部函数：SIXFLX()

eg: call SIXFLX(FAC,F,FB,FBSI)

```
DO I=1,NCTMAX
  DO J=1,5,2
    FAC(J,I)= -1.0 * FAC(J,I)
  ENDDO
ENDDO
```

DO IC=1,NCTMXU

ICPMAP(ICLMAP(IC))=IC

ENDDO

STAR CELL

**ICLMAP(I)** (PROSTAR) cell number corresponding to STAR cell index I.  
 Input to POSDAT, CONATT.

Star cell number: I

Pro-star cell number: ICLMAP(I)