



Transport Node

Parameter	Value	Unit	Step
EMF	ON		
MGNFIELD	Max Ang (deg): 30		
	Bx:		
STEPSIZE	Min (cm): 0.01	Max (cm): 10	
	Reg: R22TarLR	to Reg: v	Step:
STEPSIZE	Min (cm): 0.01	Max (cm): 10	
	Reg: R25HoVLR	to Reg: v	Step:
STEPSIZE	Min (cm): 0.01	Max (cm): 10	
	Reg: R26TarUR	to Reg: v	Step:
STEPSIZE	Min (cm): 0.01	Max (cm): 10	
	Reg: R29HoVUR	to Reg: v	Step:
STEPSIZE	Min (cm): 0.01	Max (cm): 10	
	Reg: R30TarUL	to Reg: v	Step:
STEPSIZE	Min (cm): 0.01	Max (cm): 10	
	Reg: R33HoVUL	to Reg: v	Step:
STEPSIZE	Min (cm): 0.01	Max (cm): 10	
	Reg: R34TarLL	to Reg: v	Step:
STEPSIZE	Min (cm): 0.01	Max (cm): 10	
	Reg: R37HoVLL	to Reg: v	Step:

Primary, Geometry, Media, Transport and Baising (empty) nodes are same for the both scoring ways (USRBIN and USRMED.F)!

Scoring μ^+ with USBIN

+ ess_4horn_numu.flair - flair

Physics Node

Input

TITLE ... BEAMPOS : 7 cards hidden

PHYSICS Type: EVAPORAT - Model: New Evap with heavy frag -
Zmax: 0 Amax: 0

PHYSICS Type: COALESCE - Activate: On -

PHYSICS Type: PEATHRES - Nucleons: (Anti)Hyperons:
Kaons: AntiNucleons: Pions: All E: On -
(Anti)Hyperons: Giant Dipole: off -

PHOTONUC E>0.7GeV off - Type: Quasi D off -
 Δ resonance: off - to Mat: @LASTMAT -
Mat: BLCKHOLE - Step: 1

----- GEOBEGIN ... STOP : 390 cards hidden -----

+ ess_4horn_numu.flair - flair

Scoring Node

Input

TITLE ... STEPSIZE : 394 cards hidden

SCORE Part1: MUON+ - Part2: -
Part3: - Part4: -

DCYSCORE Cooling t: ?1 - Kind: USBIN -
Det: ActiAll - to Det: ActiAll - Step: 1

USBIN Type: X-Y-Z point - Xmin: -200 Unit: 99 BIN - Name: ActiAll
Part: MUON+ - Ymin: -200 Xmax: 200 NX: 100
Zmin: 3000 Ymax: 200 NY: 100
Zmax: 3320 NZ: 160

USBIN Type: Region - R1from: R11BDCor - Unit: 98 BIN - Name: BDMup
Part: MUON+ - R2from: - R1to: R11BDCor - Step1: 20
R3from: - R2to: - Step2: -
R3to: - Step3: -

----- RANDOMIZ ... STOP : 3 cards hidden -----

Scoring μ^+ with USRMED.F

The screenshot shows the FLAIR software interface with the 'Physics' node selected in the left-hand tree. The main window is titled 'Physics Node (empty)'. The 'Input' panel shows two physics cards: 'PHYSICS' with Type: EVAPORAT and Model: New Evap with heavy frag, and another 'PHYSICS' card with Type: COALESCE. The 'GEOBEGIN ... STOP' card is also visible.

The screenshot shows the FLAIR software interface with the 'Scoring' node selected in the left-hand tree. The main window is titled 'Scoring Node (empty)'. The 'Input' panel shows a 'SCORE' card with Part1: ENERGY and Part2: ENERGY. Below it are 'USERWEIG', 'USERDUMP', and two 'USRBIN' cards. The 'RANDOMIZ ... STOP' card is also visible. The right side of the window displays the USRMED.F code for scoring particles at the beam dump level.

```
*-----score all particles before and after beam dump Block Core-----*
  if(ij.eq.10.or.ij.eq.11.or.ij.eq.1.or.ij.eq.13.or.ij.eq.14)then
*before the core
  if((mreg.eq.13).and.(newreg.eq.11))then
    write(94,2000,err=999)ij,Eksco
  endif
*after the core
  if((mreg.eq.11).and.(newreg.eq.10))then
    write(95,2000,err=999)ij,Eksco
  endif
*after the dump
  if((mreg.eq.3).and.(newreg.eq.2))then
    write(96,2000,err=999)ij,Eksco
  endif

  endif

999 continue
2000 format(i3,(1x,e14.7))

  RETURN
*=== End of subroutine Usrmed =====*
  END
```

**The USRMED.F code
To score particles at the
beam dump level**