

22nd SPES meeting 12th of December 2001

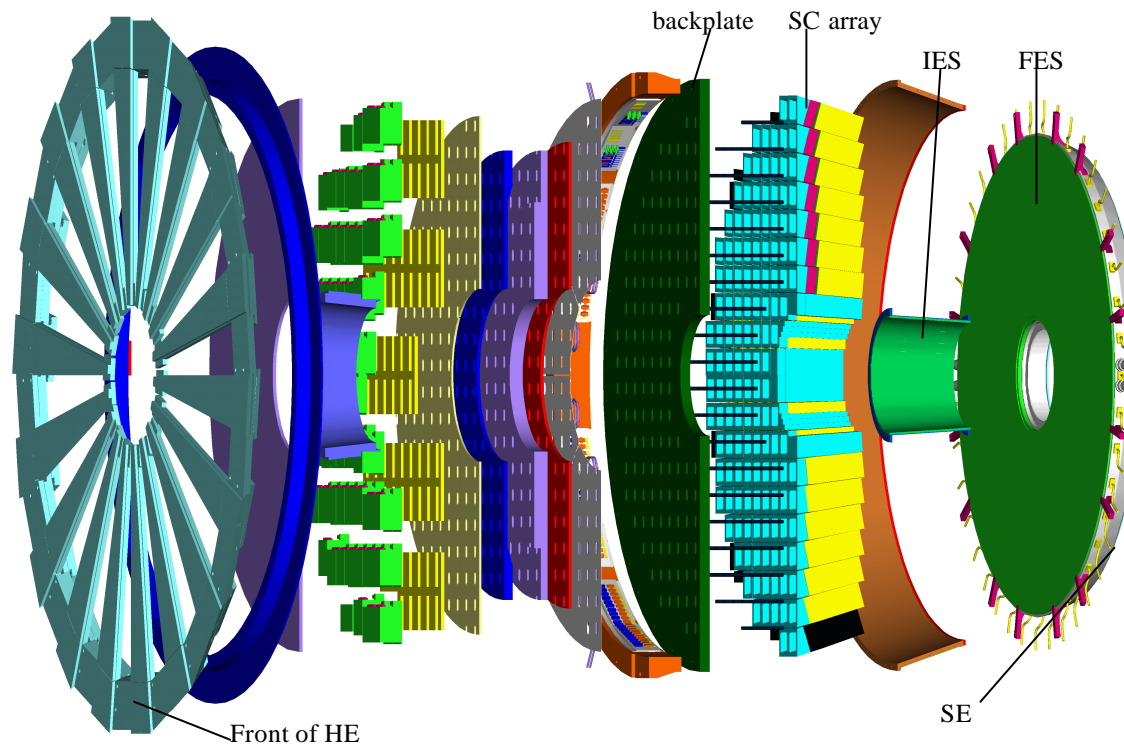
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# THERMAL ANALYSIS OF ETA=3 REGION EE AND SE

I.Wichrowska-Polok ST/CV

- 1.The problem and required results.
- 2.Geometry of the model.
- 3.Boundary conditions
- 4.The results of the analysis.

## The problem and required results.

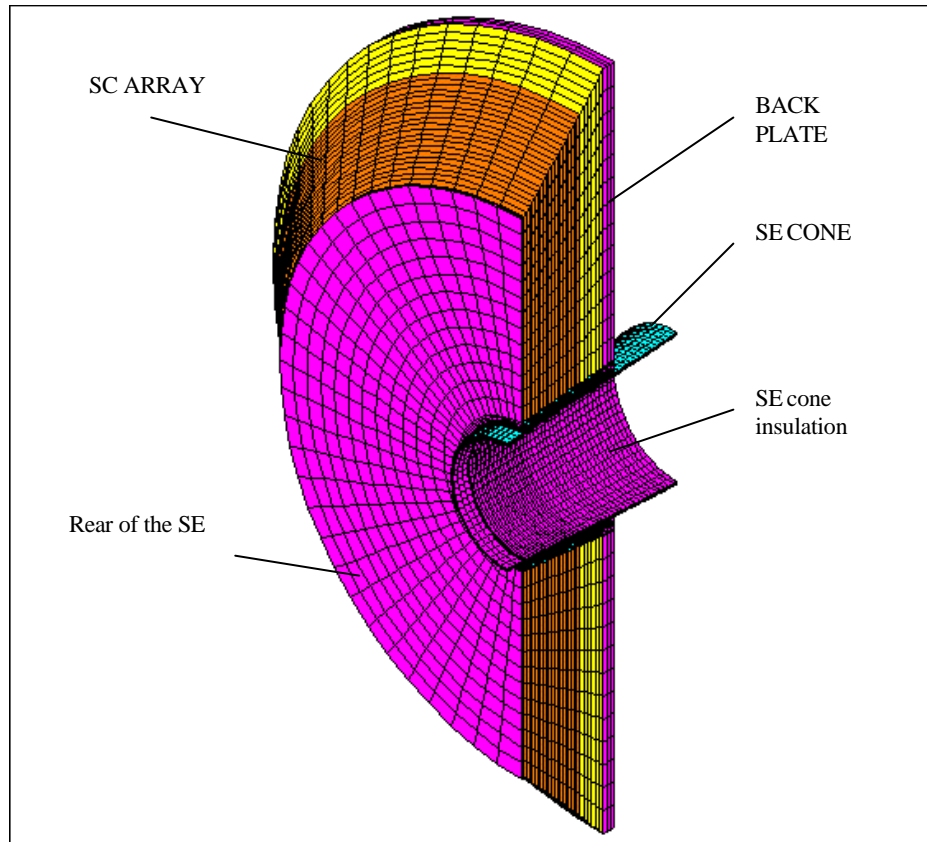


- SE support cone situated in EE central hole, inside SE cone- nitrogen gas
- Temperature of the gas can vary 3 degrees from its mean

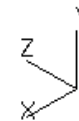
### Goal of analysis:

- Find temperature variation inside SC array;
- Effect of insulation of SE cone (20 mm thick).

# The model and boundary conditions



STAR  
D  
PROSTAR 3.10  
23-NOV-01  
VIEW  
1.000  
1.000  
-1.000  
ANGLE  
-0.000  
DISTANCE  
1708.398  
CENTER  
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-320.085  
497.911  
EHIDDEN PLOT

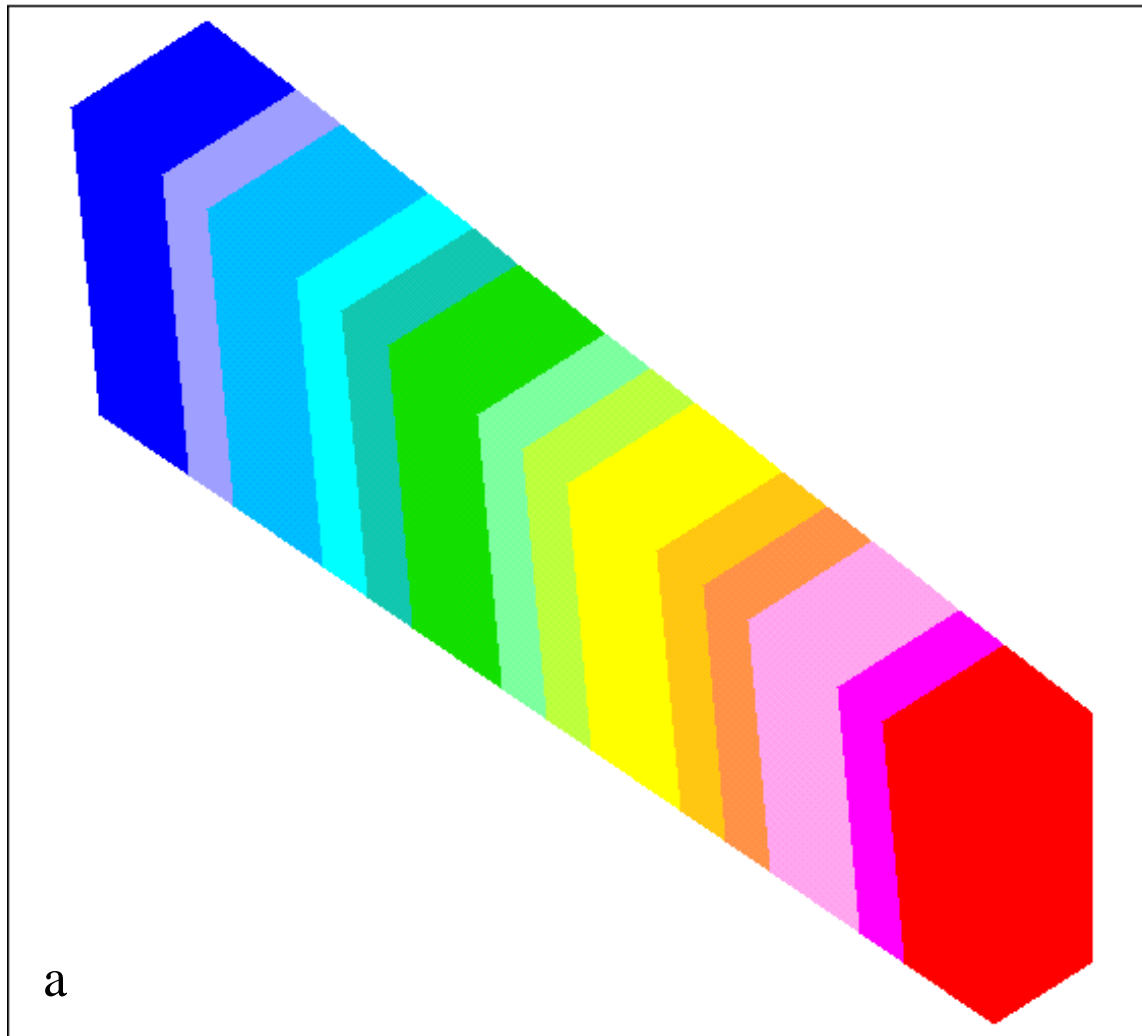


- back plate precision cooling to  $18 \pm 0.05\text{C}$ ;
- rear of SE kept at the temperature  $18 \pm 0.02\text{C}$ ;
- SE cone/SE fixation  $18 \pm 0.5\text{C}$
- adiabatic conditions -outer part of the model
- steady state analysis for gas temperature  $18\text{C}$  (first run) and  $20\text{C}$ (second run)

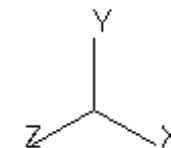
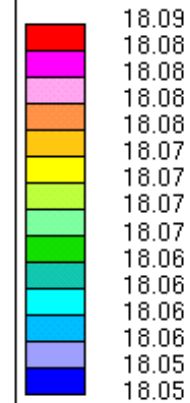
# The results of the analysis

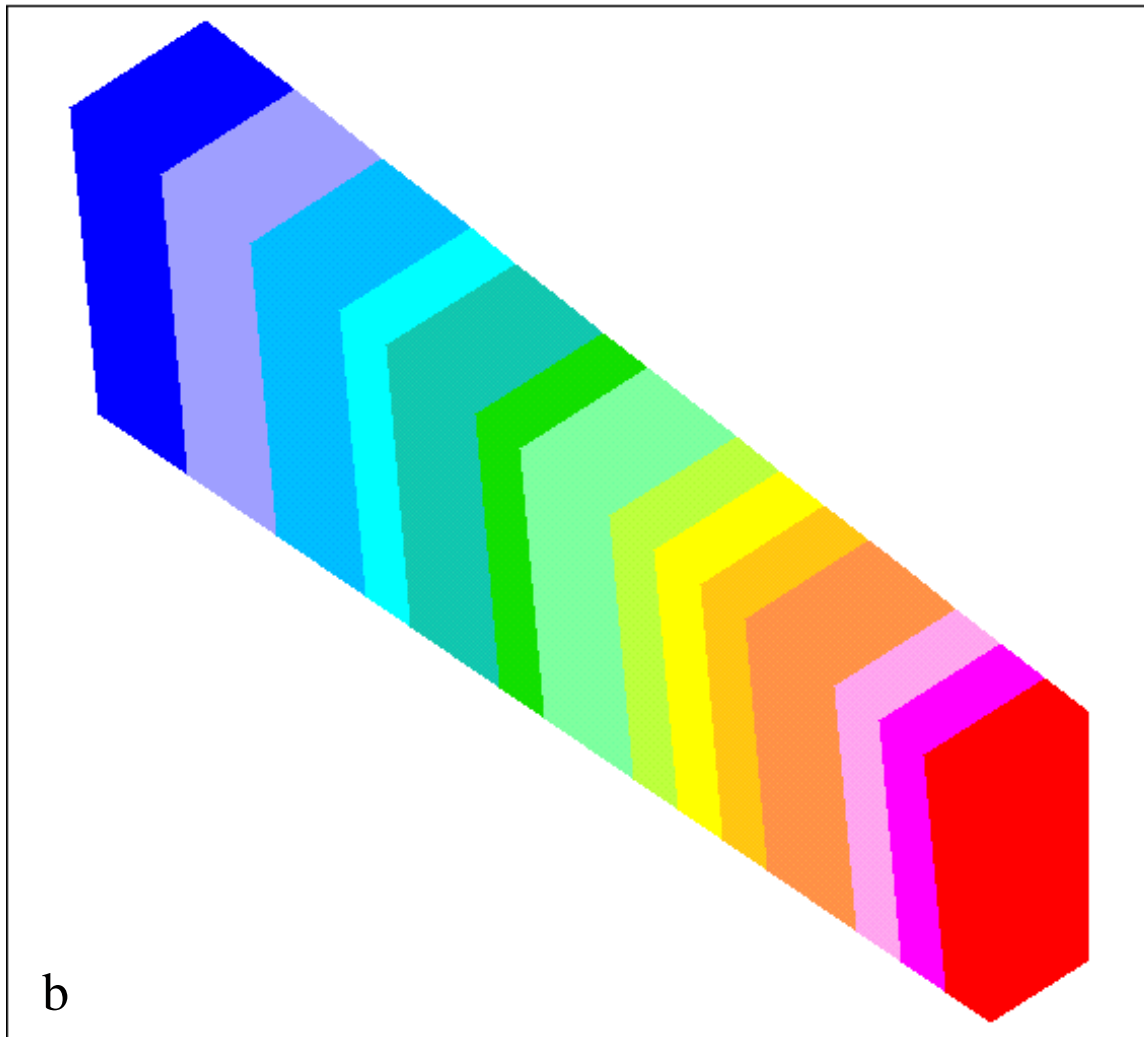
## TEMPERATURE OF SC SITUATED CLOSE TO CENTRAL HOLE

- a- for gas temperature 18C and no insulation of SE cone;
- b- for gas temperature 20C and no insulation of SE cone;
- c- for gas temperature 20C and insulation 20 mm of SE cone



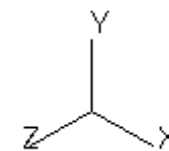
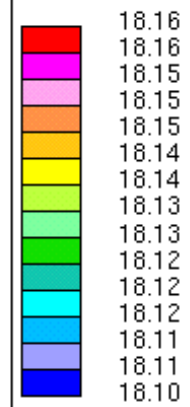
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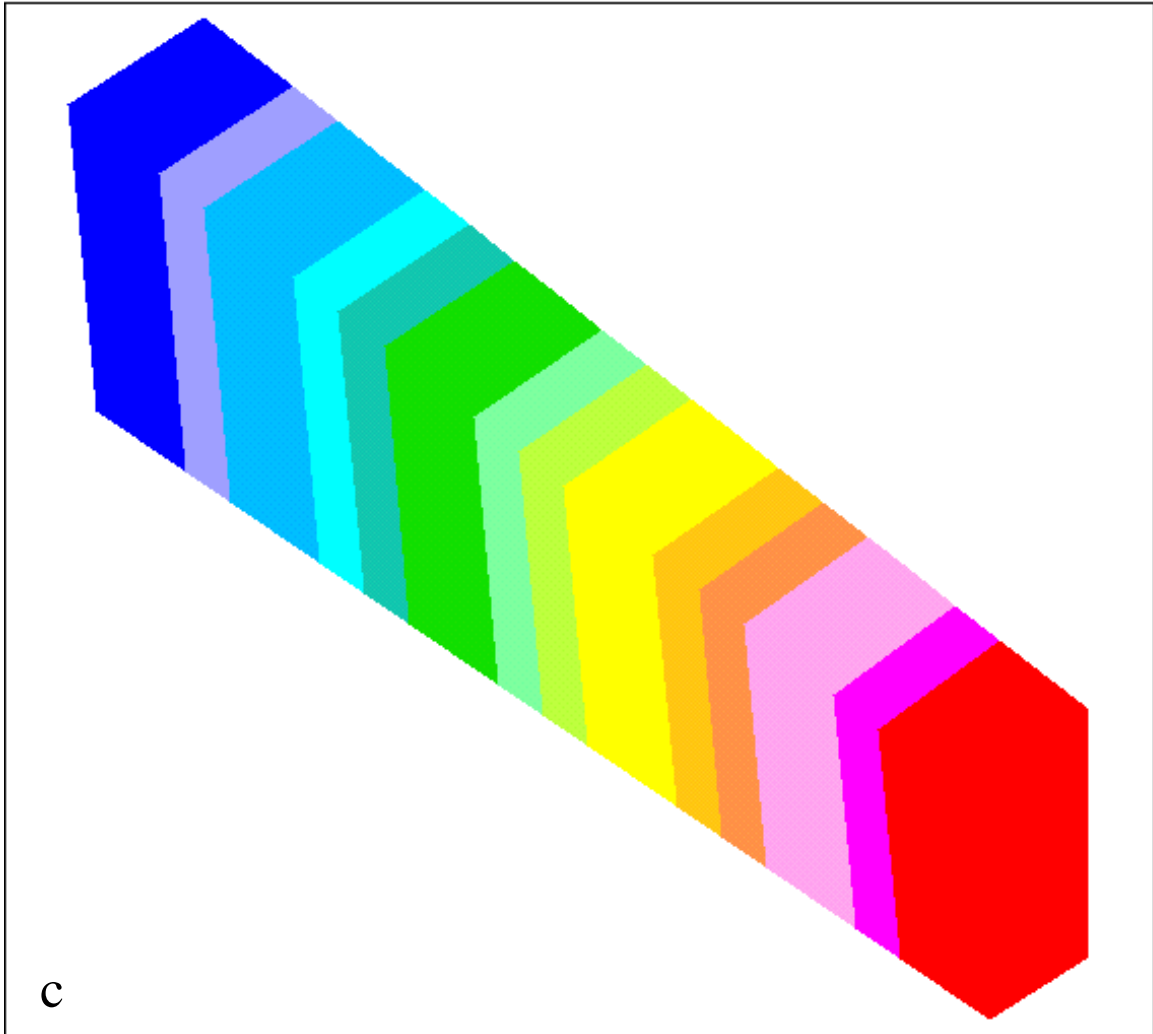




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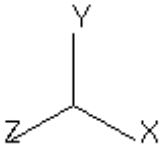
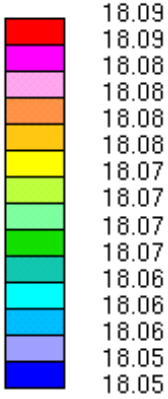




c

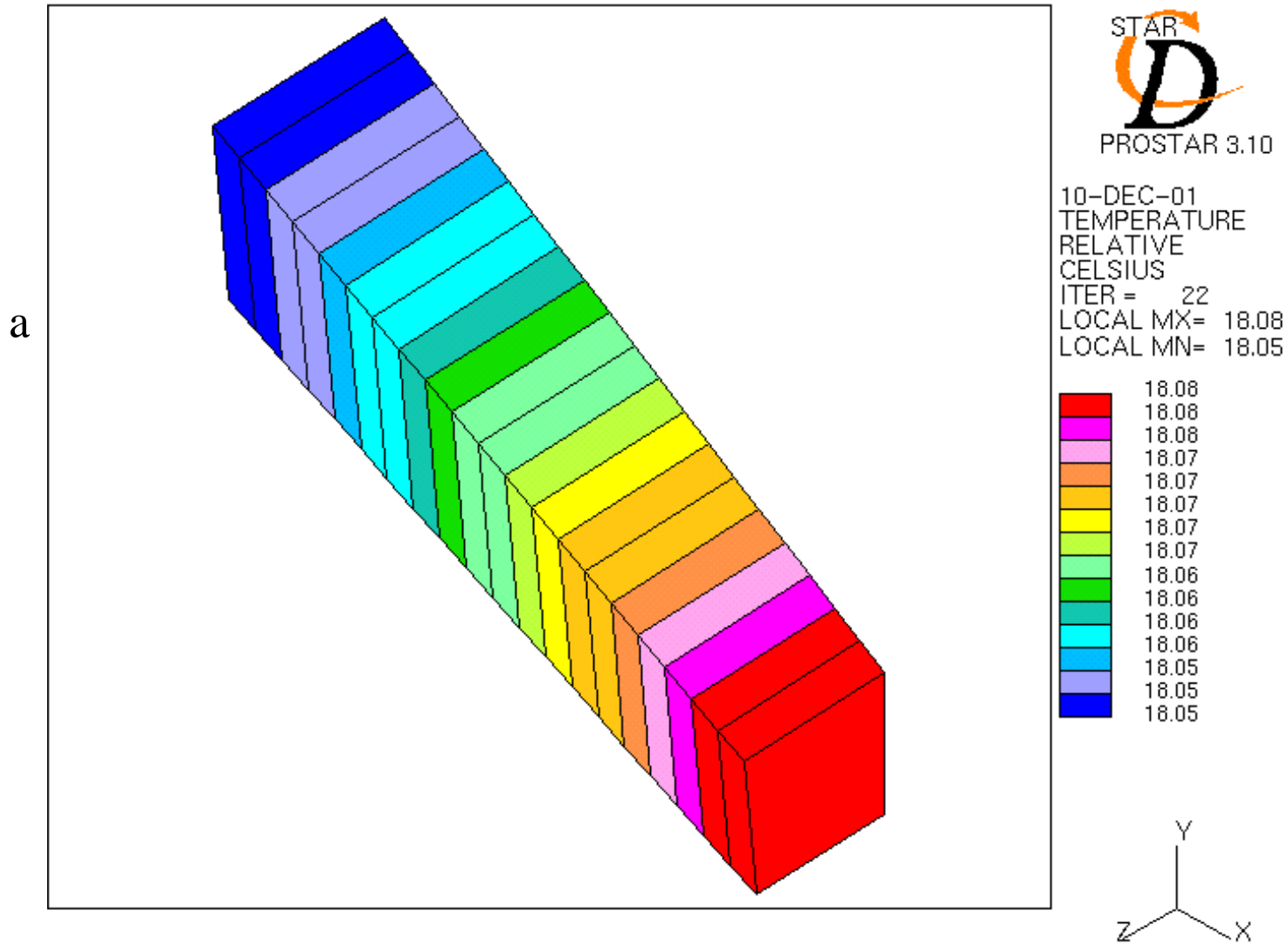


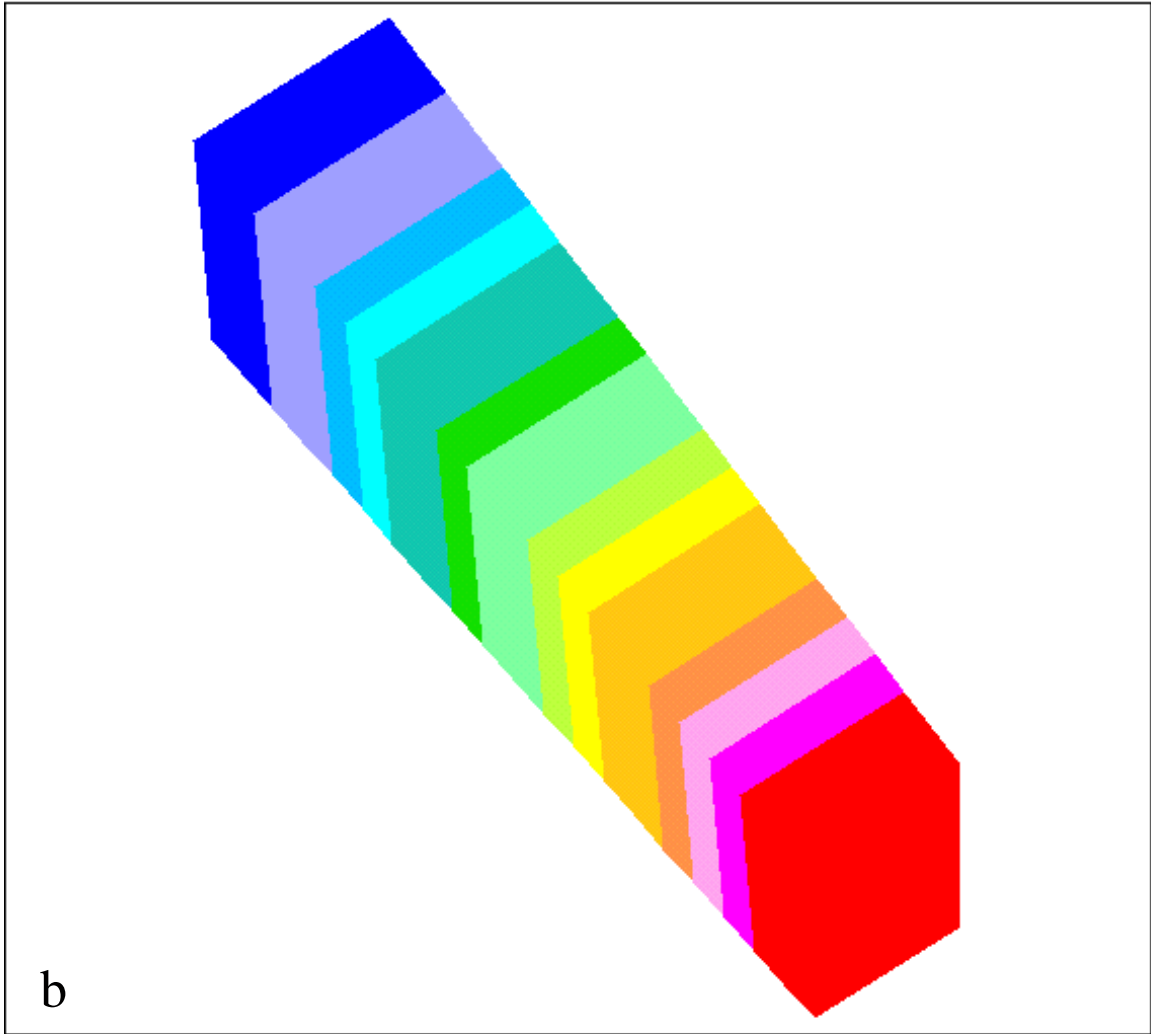
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RELATIVE  
CELSIUS  
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LOCAL MN= 18.05



### TEMPERATURE OF SC SITUATED IN CENTRUM OF SC ARRAY

- a- for gas temperature 18C and no insulation of SE cone;
- b- for gas temperature 20C and no insulation of SE cone;
- c- for gas temperature 20C and insulation 20 mm of SE cone



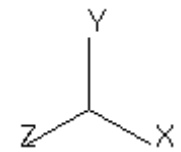


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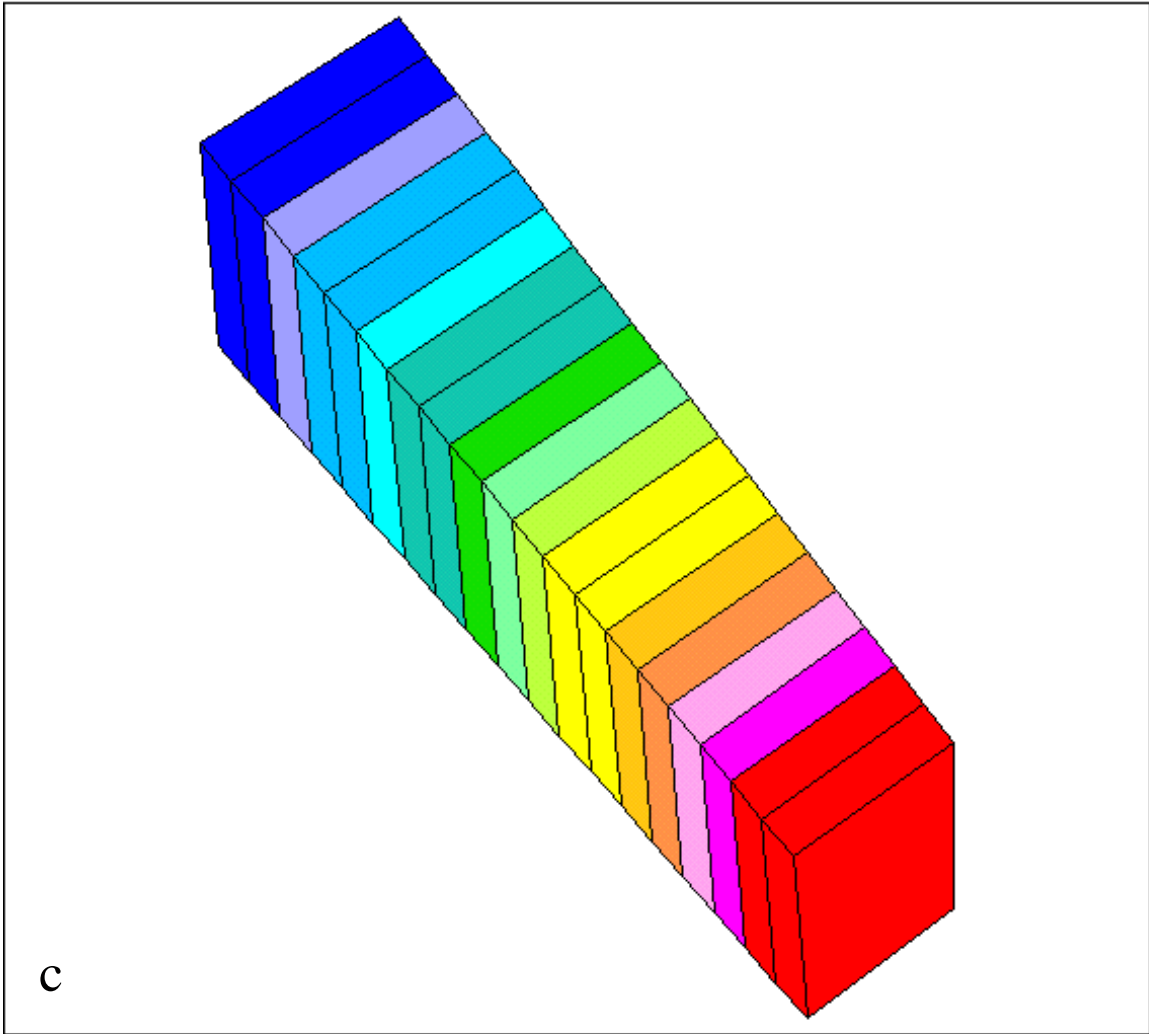
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CELSIUS  
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LOCAL MN= 18.05

Red	18.10
Magenta	18.09
Pink	18.09
Light Pink	18.09
Orange	18.08
Yellow-Orange	18.08
Yellow	18.08
Light Green	18.07
Green	18.07
Teal	18.07
Cyan	18.06
Light Blue	18.06
Blue	18.05
Dark Blue	18.05

b





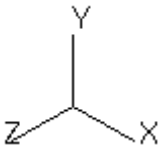
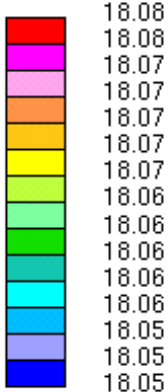


c



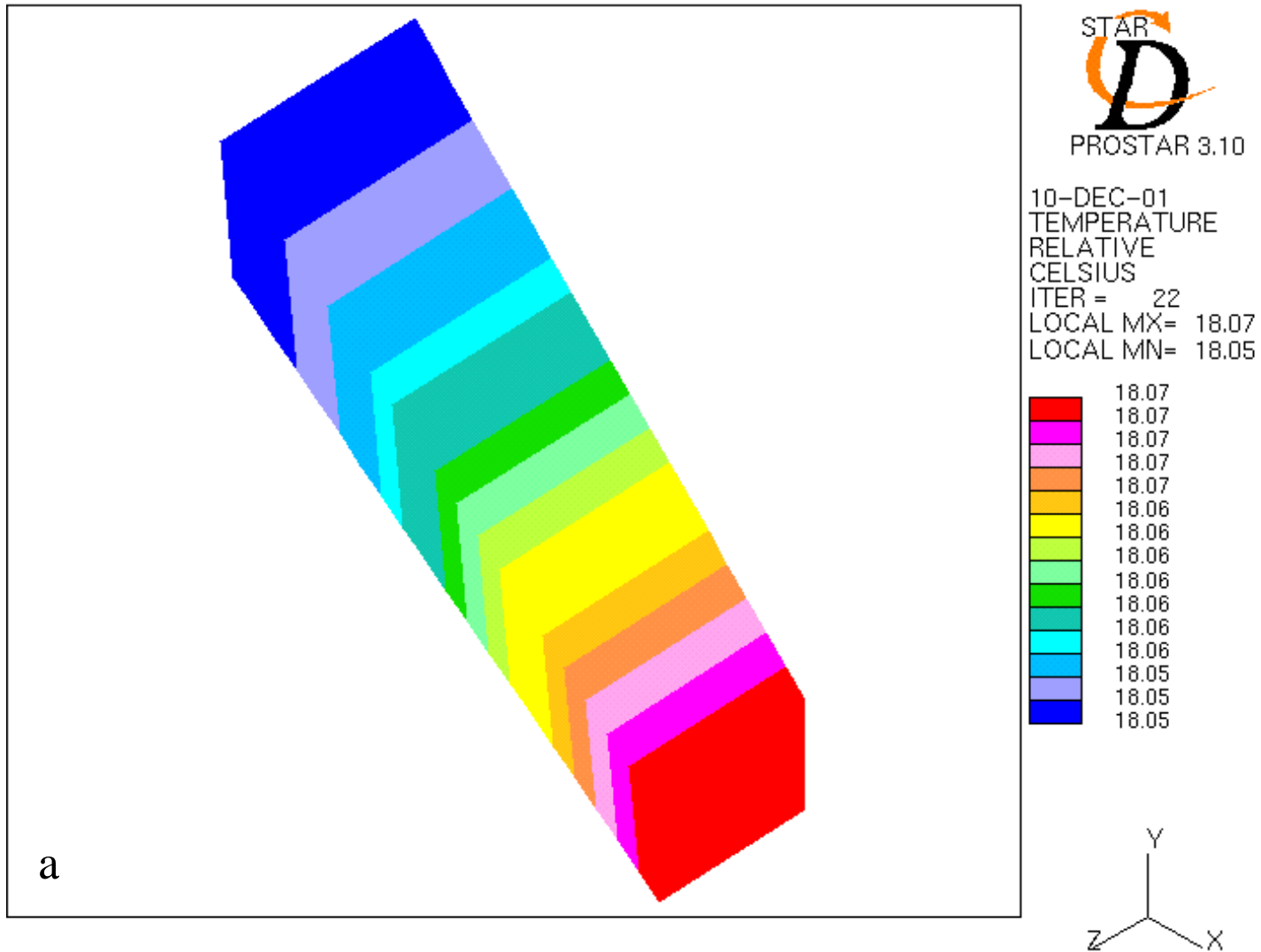
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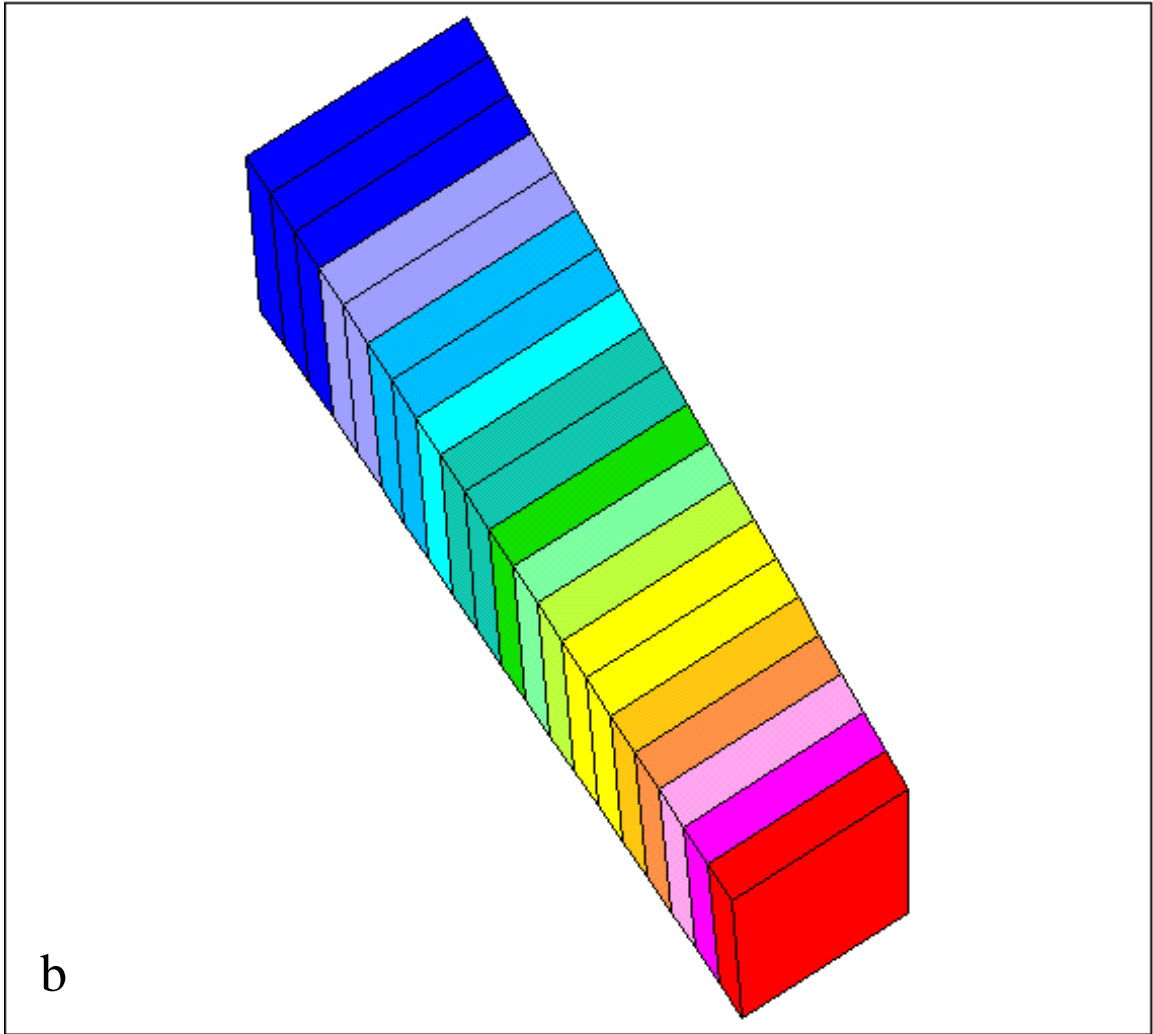
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RELATIVE  
CELSIUS  
ITER = 23  
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LOCAL MN= 18.05



### TEMPERATURE OF SC SITUATED IN OUTER PART OF SC ARRAY

- a- for gas temperature 18C and no insulation of SE cone;
- b- for gas temperature 20C and no insulation of SE cone;
- c- for gas temperature 20C and insulation 20 mm of SE cone

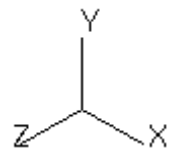


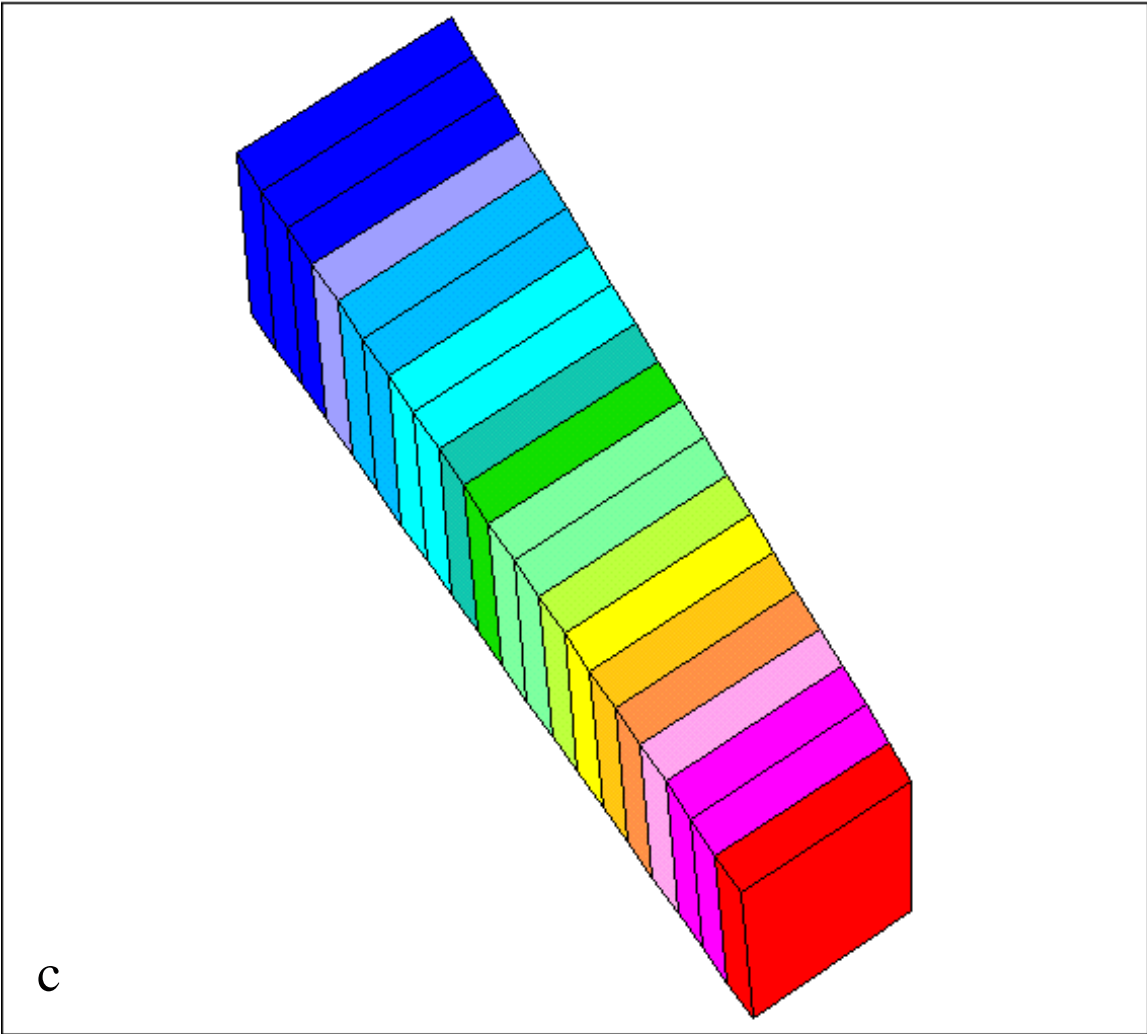


PROSTAR 3.10

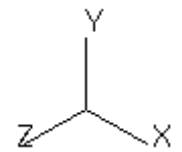
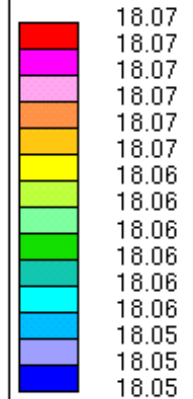
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RELATIVE  
CELSIUS  
ITER = 27  
LOCAL MX= 18.08  
LOCAL MN= 18.05

Red	18.08
Magenta	18.08
Pink	18.07
Light Pink	18.07
Orange	18.07
Yellow-Orange	18.07
Yellow	18.07
Light Green	18.06
Green	18.06
Teal	18.06
Cyan	18.06
Light Blue	18.05
Blue	18.05



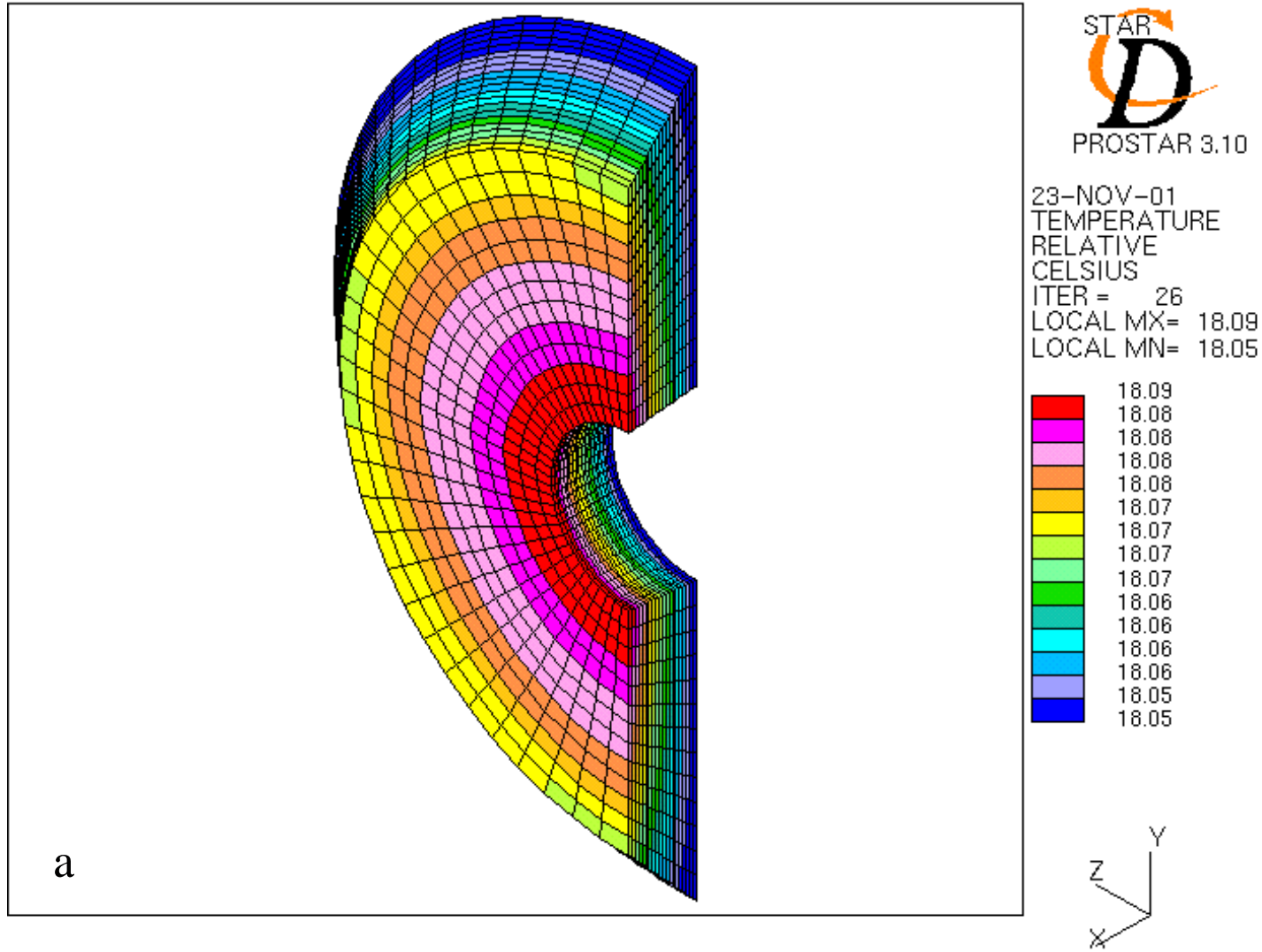


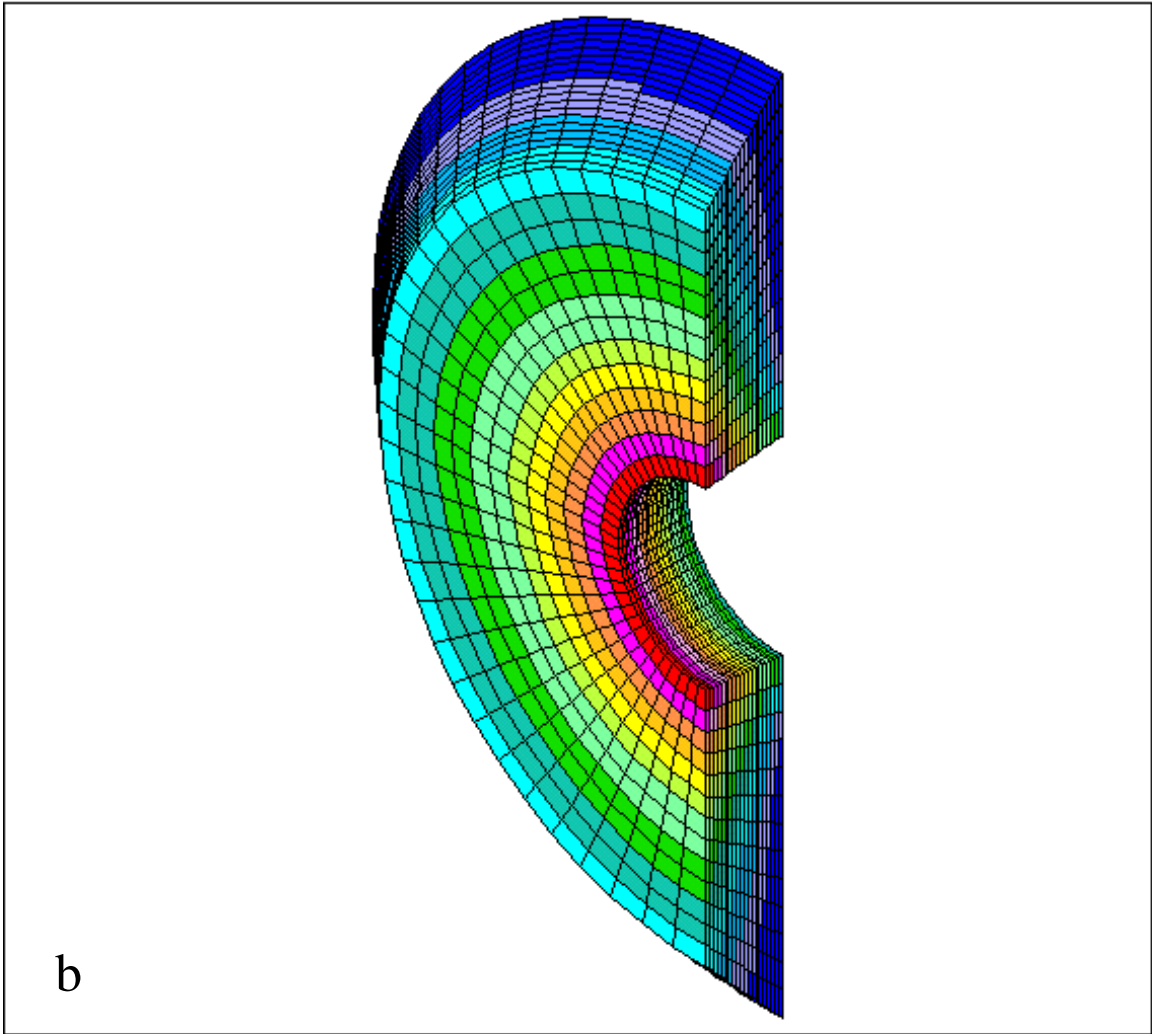
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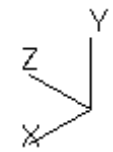
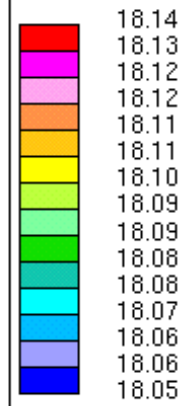
### TEMPERATURE OF SC ARRAY

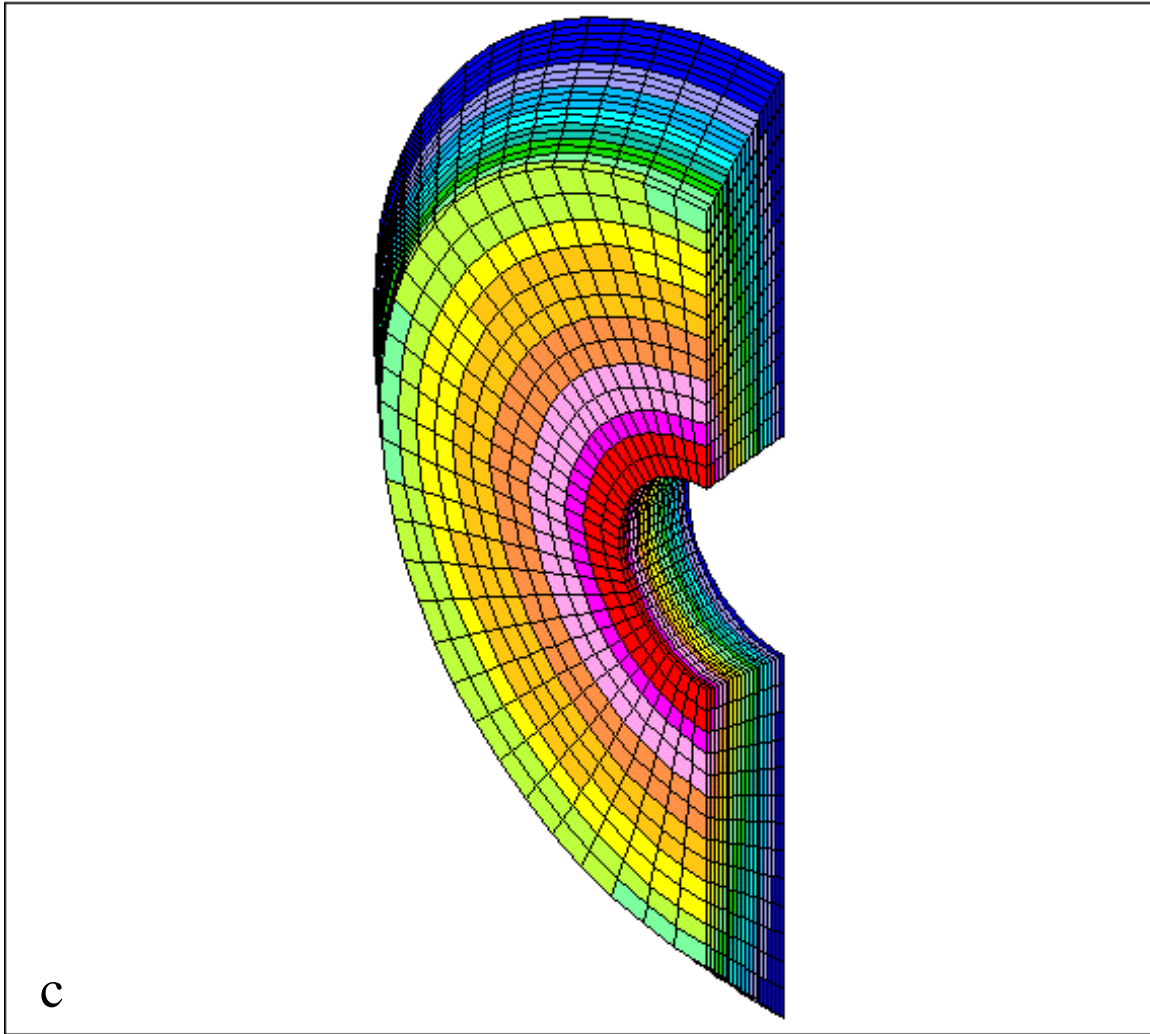
- a- for gas temperature 18C and no insulation of SE cone;
- b- for gas temperature 20C and no insulation of SE cone;
- c- for gas temperature 20C and insulation 20 mm of SE cone



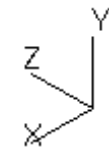
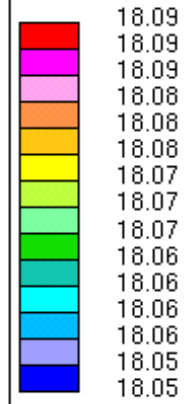


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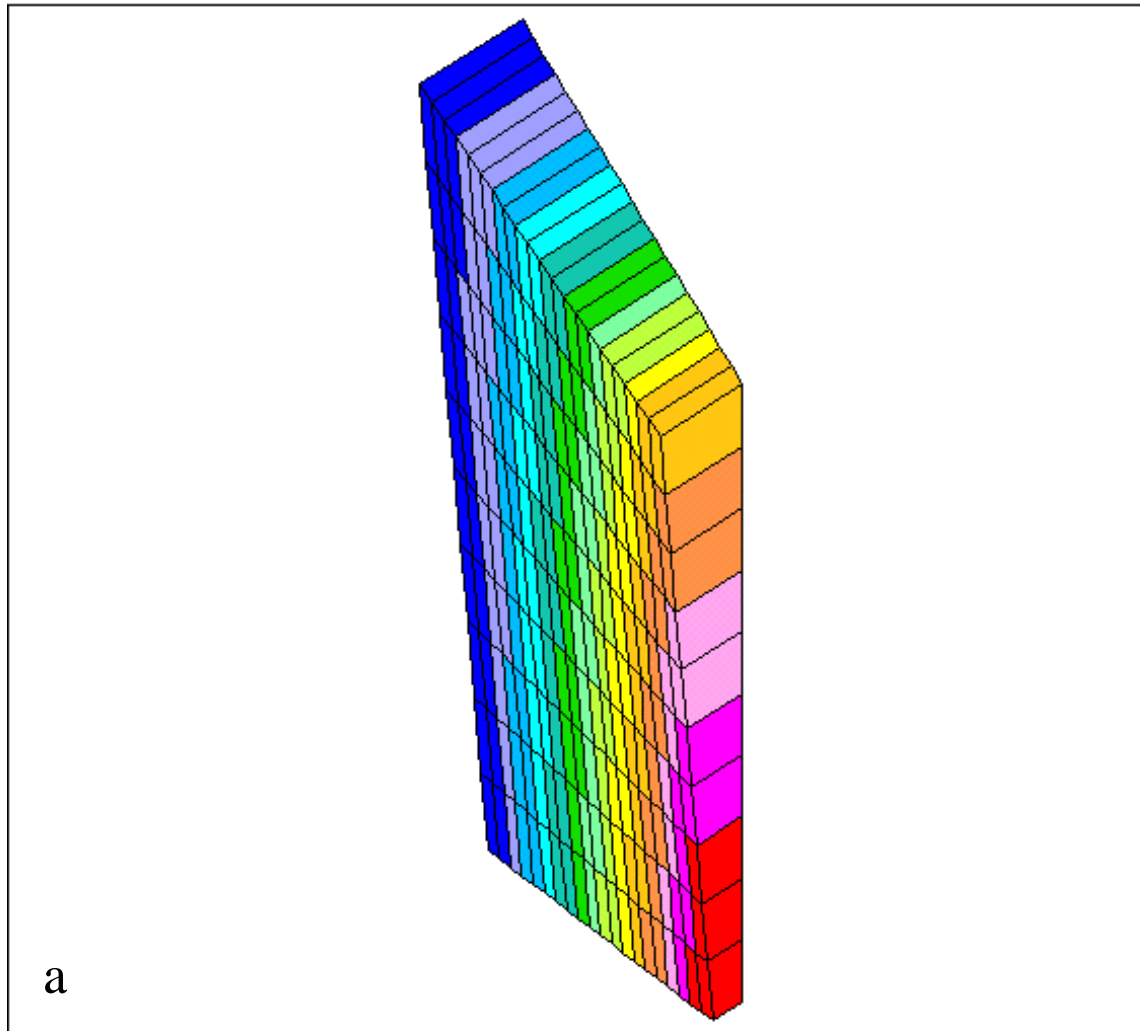


23-NOV-01  
TEMPERATURE  
RELATIVE  
CELSIUS  
ITER = 27  
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LOCAL MN= 18.05

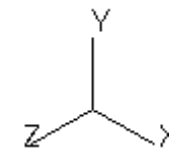
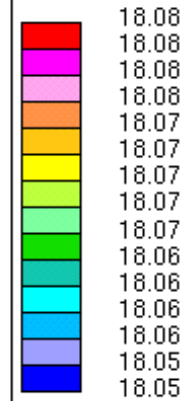


### TEMPERATURE OF SC ARRAY IN R DIRECTION

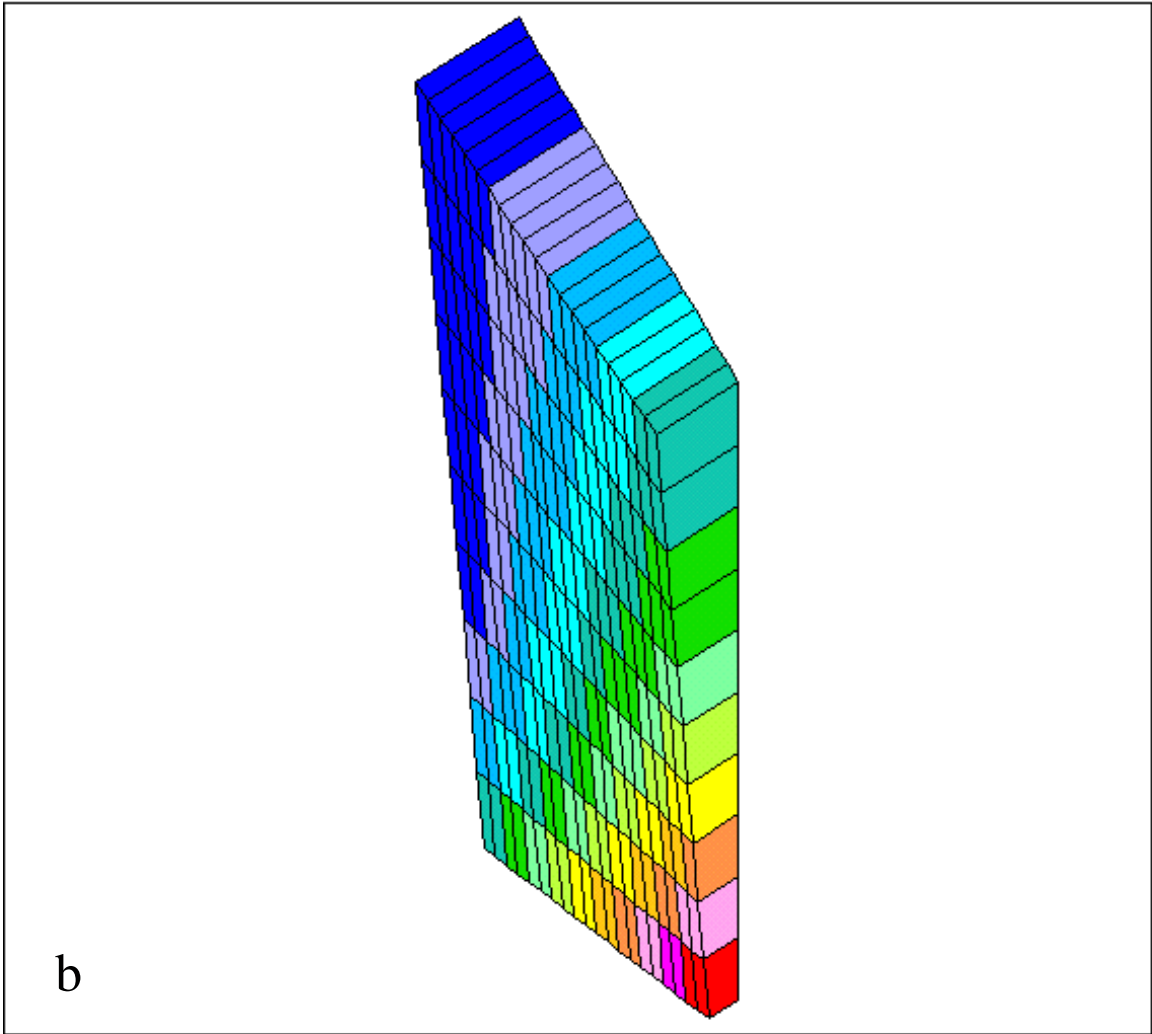
- a- for gas temperature 18C and no insulation of SE cone;
- b- for gas temperature 20C and no insulation of SE cone;
- c- for gas temperature 20C and insulation 20 mm of SE cone



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RELATIVE  
CELSIUS  
ITER = 22  
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LOCAL MN= 18.05

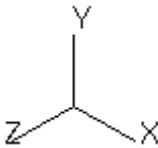
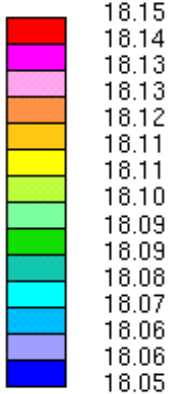


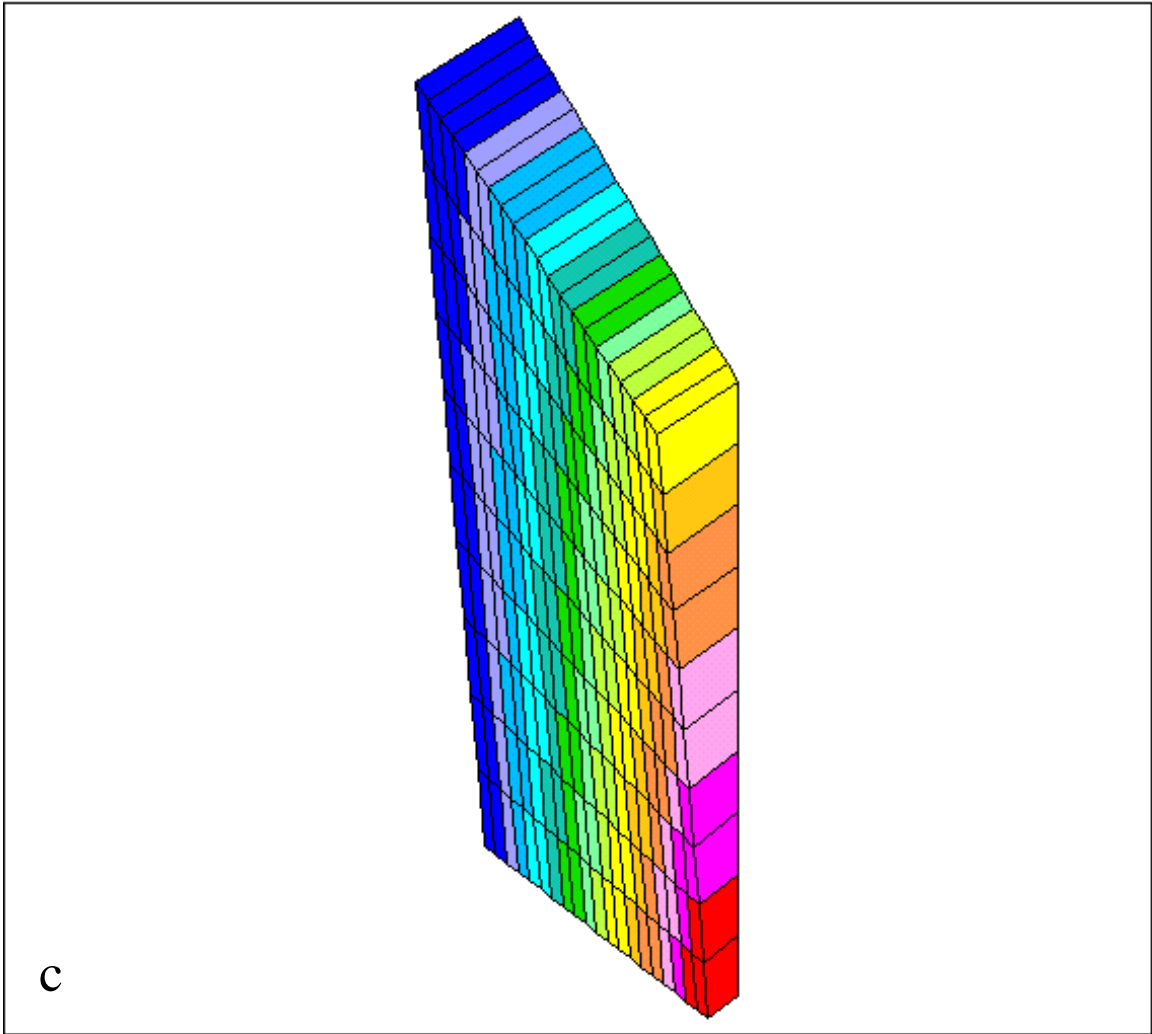




PROSTAR 3.10

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TEMPERATURE  
RELATIVE  
CELSIUS  
ITER = 27  
LOCAL MX= 18.15  
LOCAL MN= 18.05





10-DEC-01  
TEMPERATURE  
RELATIVE  
CELSIUS  
ITER = 23  
LOCAL MX= 18.09  
LOCAL MN= 18.05

