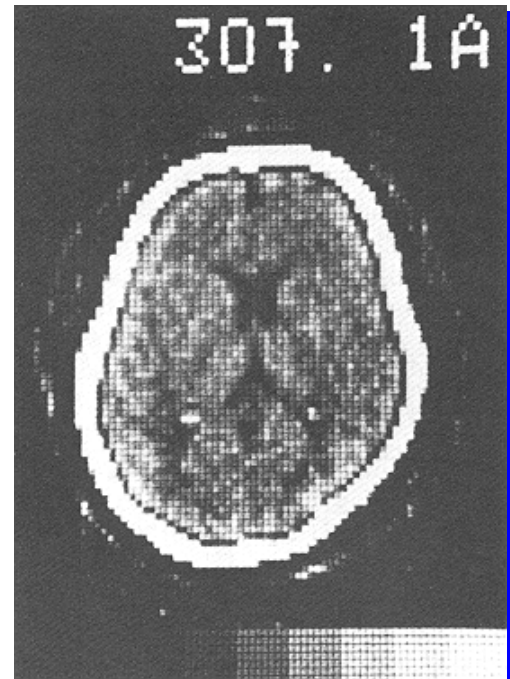
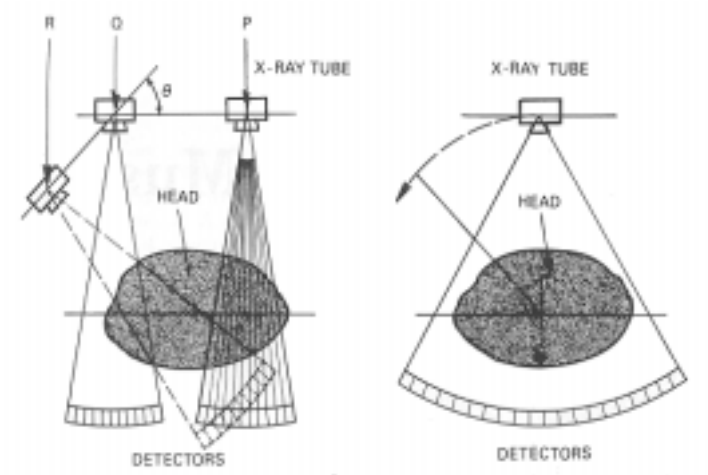
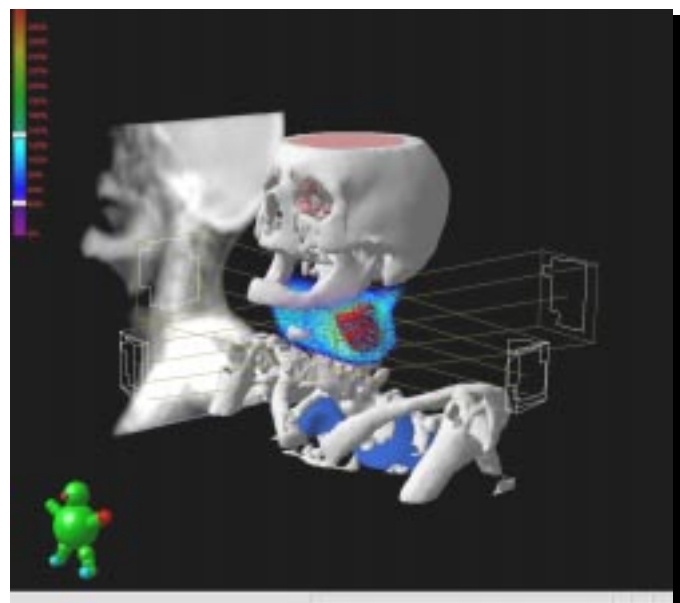
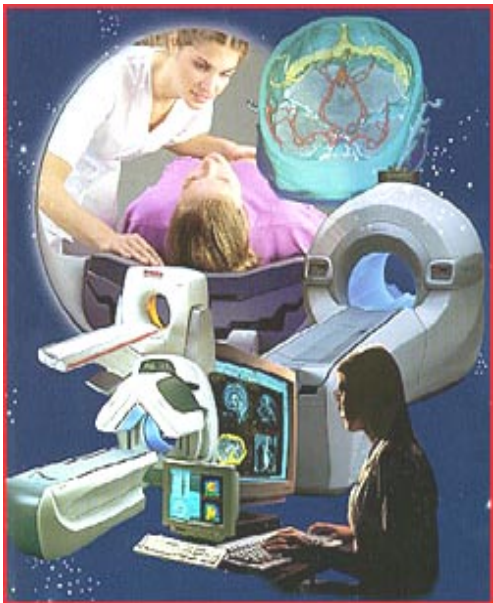


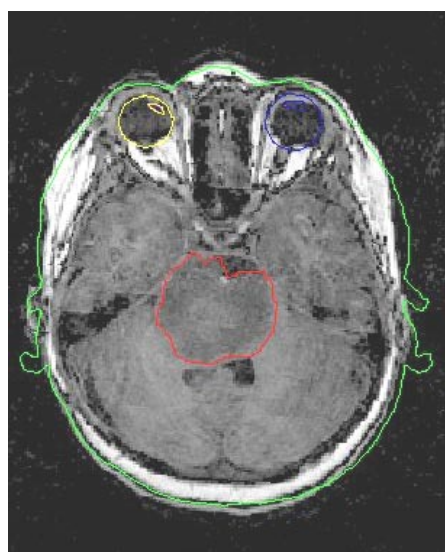
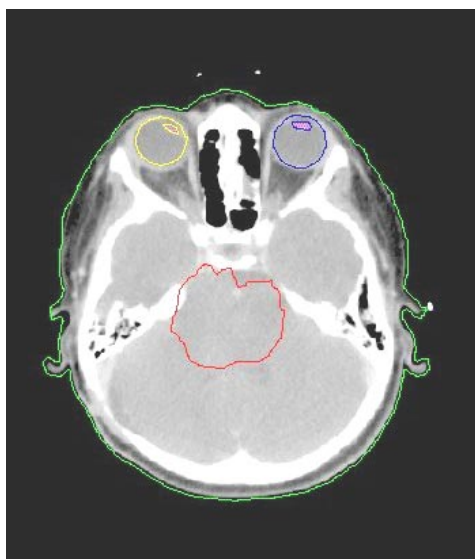
## A Importância das Imagens Diagnósticas na Radioterapia



## A Importância das Imagens



## Fusão de imagens



## Considerações na Escolha de um Sistema de Planejamento?

QUAL A  
FINALIDADE ?

RECURSOS:  
HARDWARE  
SOFTWARE

CONECTIVIDADE

DESENVOLVIMENTO

TREINAMENTO E  
SUPORTE TÉCNICO

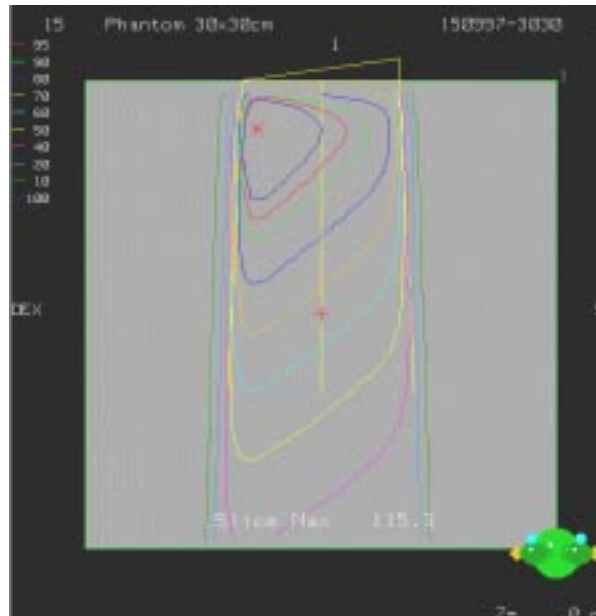
## Controle de Qualidade para Sistemas de Planejamento em Radioterapia

- AAPM – TG - 53
- TECDOC – 1151 IAEA

## Testes de Aceitação

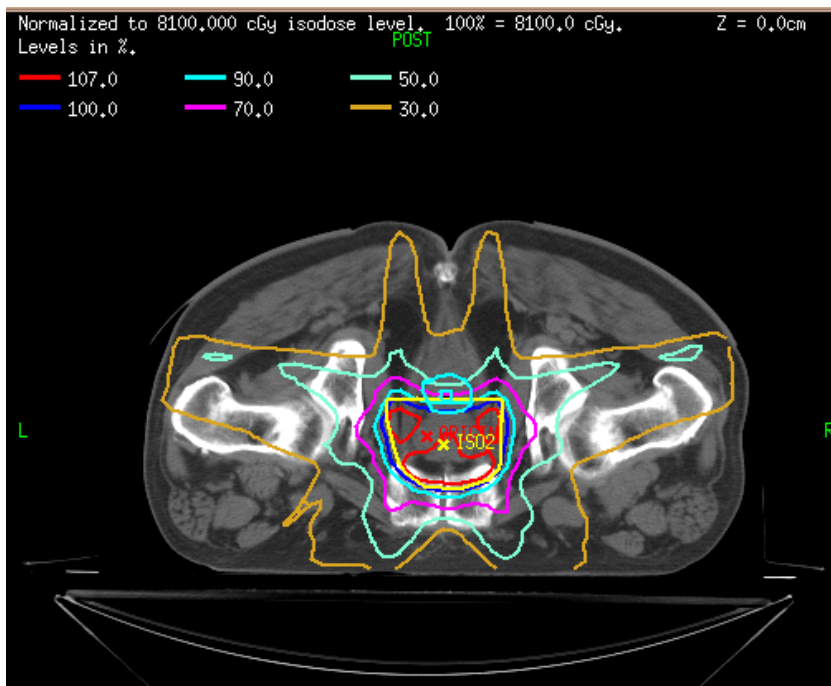
### Especificações do sistema:

- Hardware
- Software
- Testes de performance
- Periféricos e Interfaces
- Documentação



## “COMISSIONAMENTO” AQUISIÇÃO DE DADOS CLÍNICOS

### Processo de colocar o sistema em atividade clínica

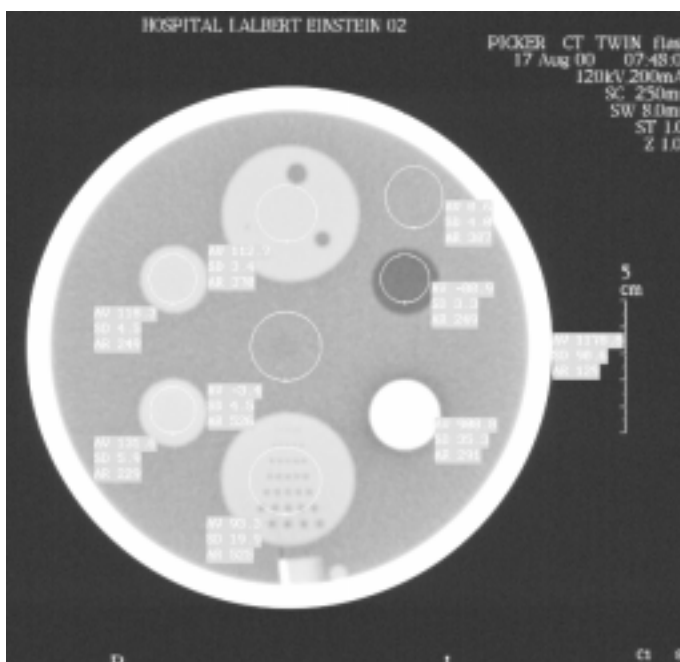


## Imobilização

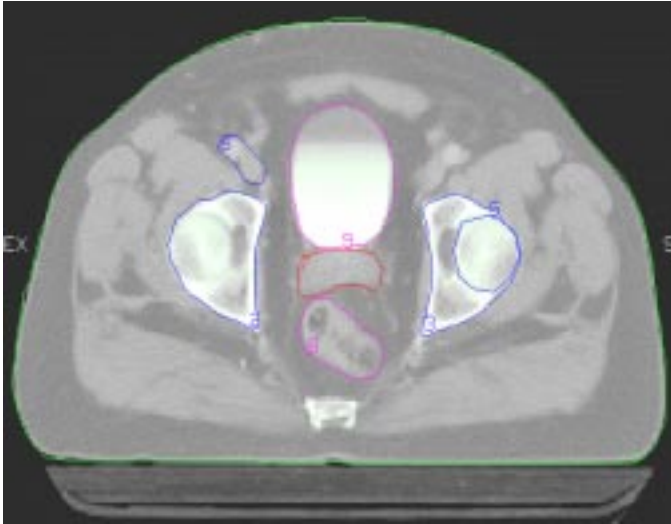


## Aspectos Não Dosimétricos

**Dens. Eletrônica**  
**Versus**  
**No. de CT**



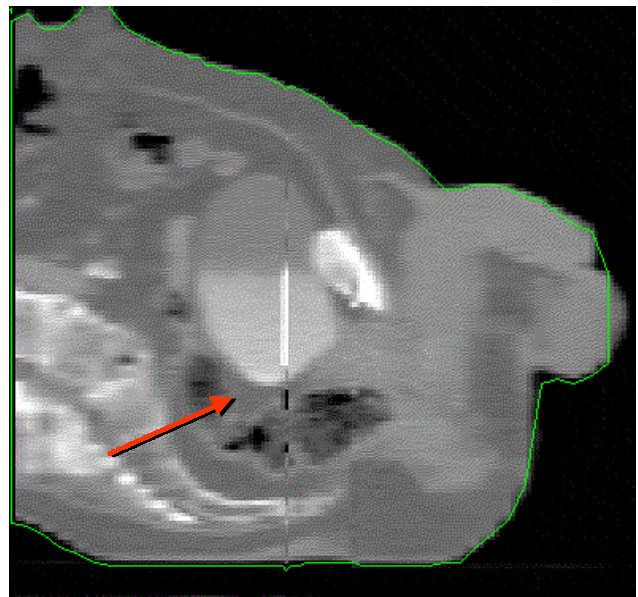
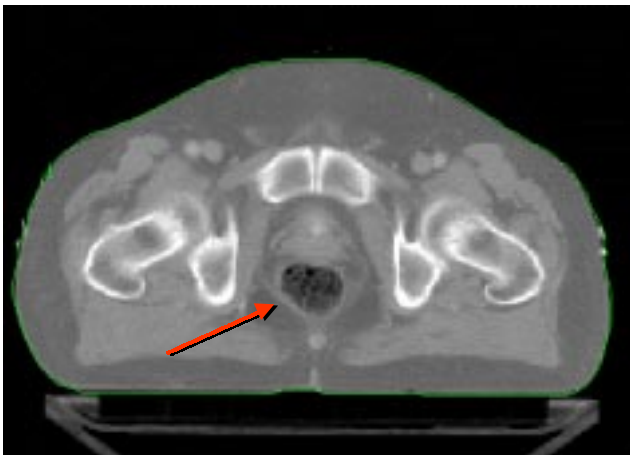
## Aquisição de Imagens



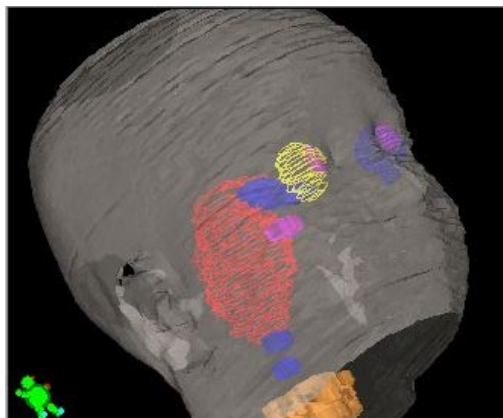
- **Posicionamento;**
- **Contrastes;**
- **Técnica de aquisição**

- **Transferência para o sist. planejamento**

## Artefatos



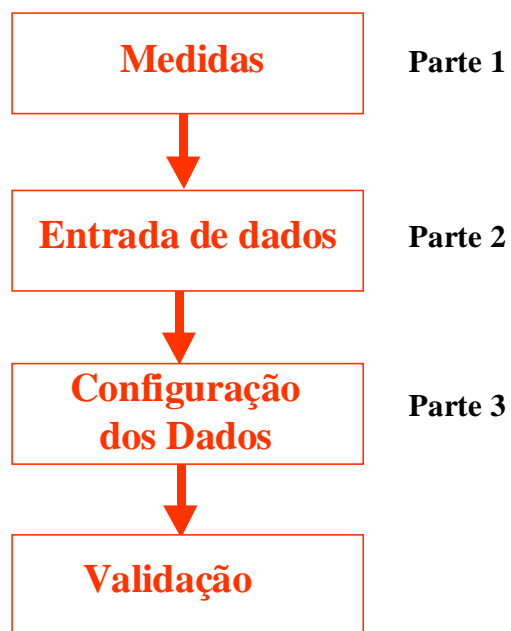
## Reconstrução de imagens



## Aquisição de Dados Dosimétricos da Unidade de Tratamento



## Procedimento de Aquisição e Configuração



## Medidas para o Modelo Regular

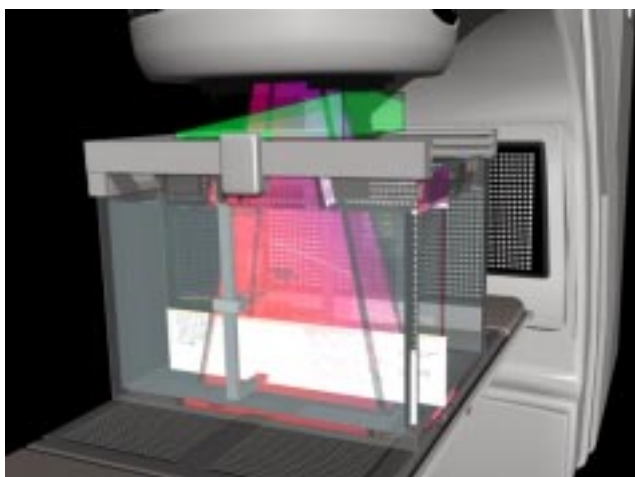
### Campos Abertos:

- PDP's dos campos abertos (0-30cm)
- Perfis dos campos abertos: 5 profundidades
- Perfil diagonal do campo aberto: 5 prof.

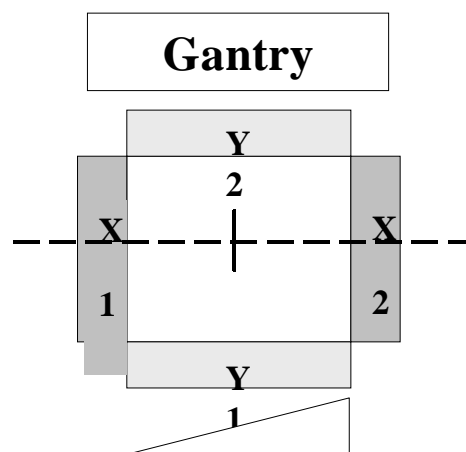
### Campos com Filtro:

- PDP's dos campos com filtro (0-30cm)
- Perfis dos campos com filtro: 5 prof.
- Perfil Longitudinal do filtro: cpo. 15x15cm / prof. = 5 cm

## Posicionamento para Medidas



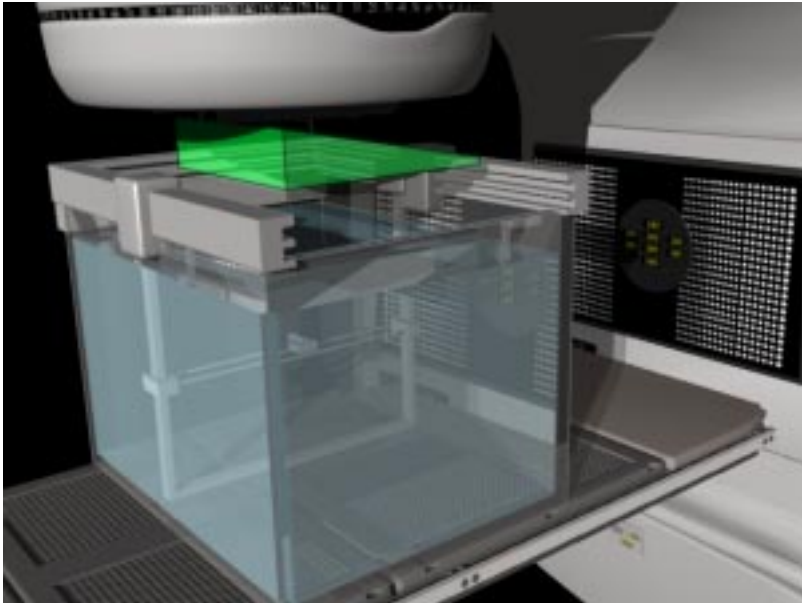
## Campo Aberto e Com Filtro



- PDP - sentido da medida: de baixo para cima**  
 - considerar o pto. efetivo de medida da câmara

**Largura do Perfil =  $[C * ((SSD+d)/SSD)] + 10$  (cm)**  
 Para todas as prof.

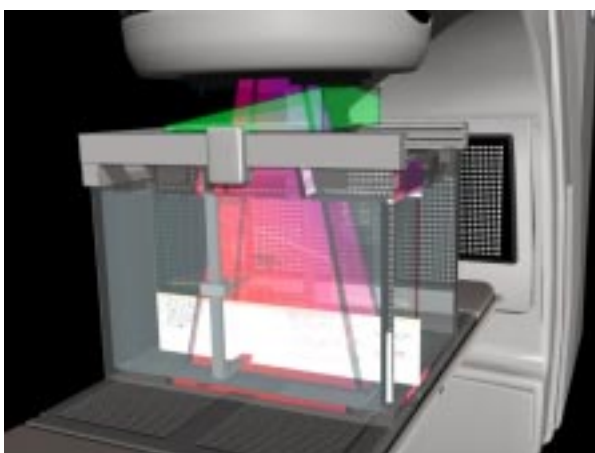
### Posicionamento para Medidas



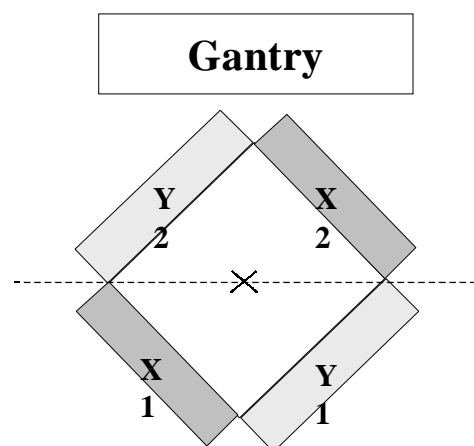
#### Perfil Longitudinal:

- cpo. 15 x 15 cm
- girar o colimador: medida no eixo X
- única prof. = 5 cm

### Posicionamento para Medidas



### Campo Diagonal



**Obs:**

- campo máximo (40 x 40 cm)
- usualmente: deslocar o fantom (mesa)
- medir meio perfil



# Aquisição de Dados da Unidade de Tratamento

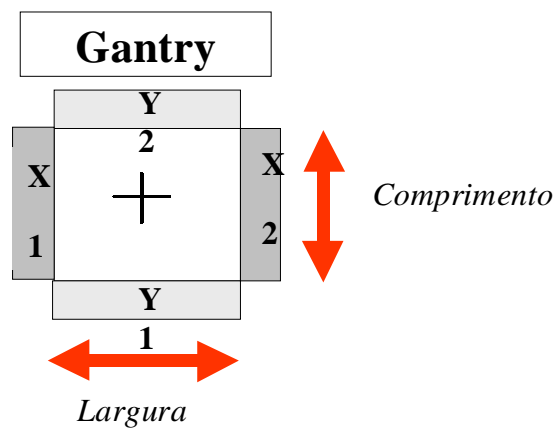
## FÓTONS

Medidas para o modelo Pencil Beam:

Campos Abertos:

- Fatores de transmissão de blocos
- Fatores de absorção de bandejas
- Coeficiente de atenuação linear para compensadores
- Enhanced Dynamic Wedges (\*)

(\*): Nenhuma medida adicional é necessária para a configuração do Filtro Dinâmico

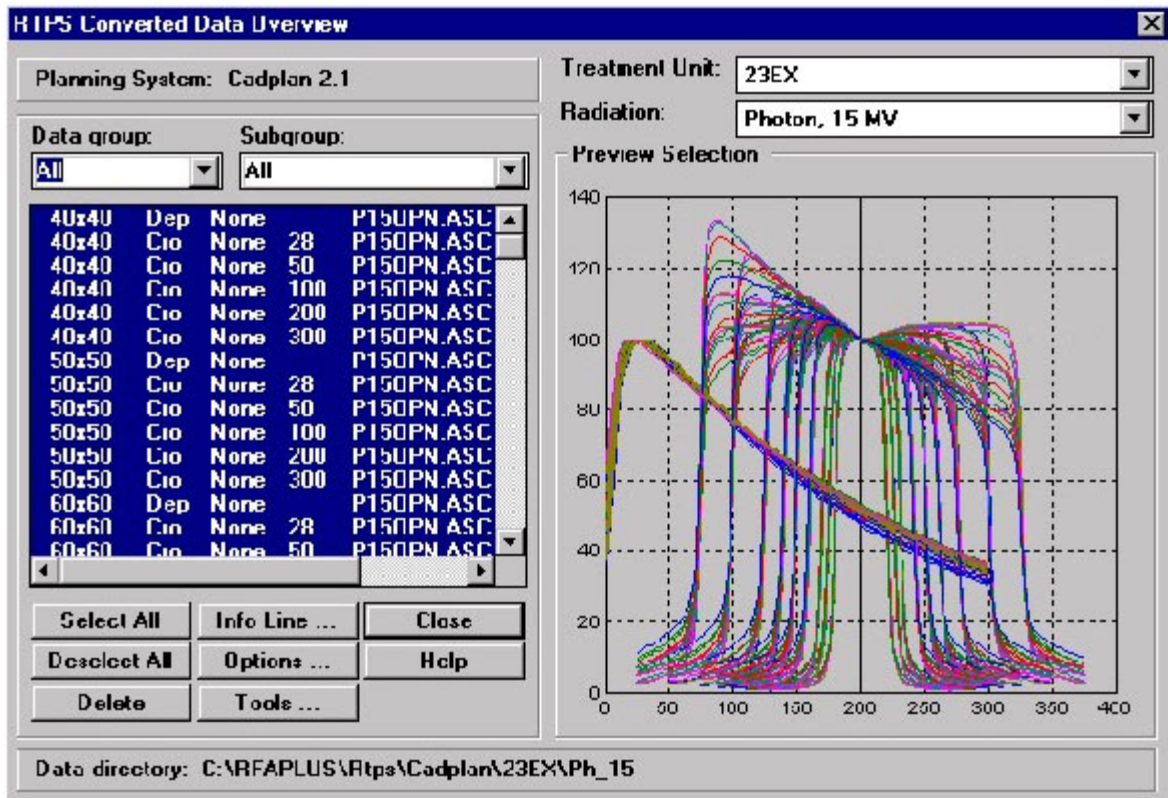


## Cálculo da Unidade Monitor

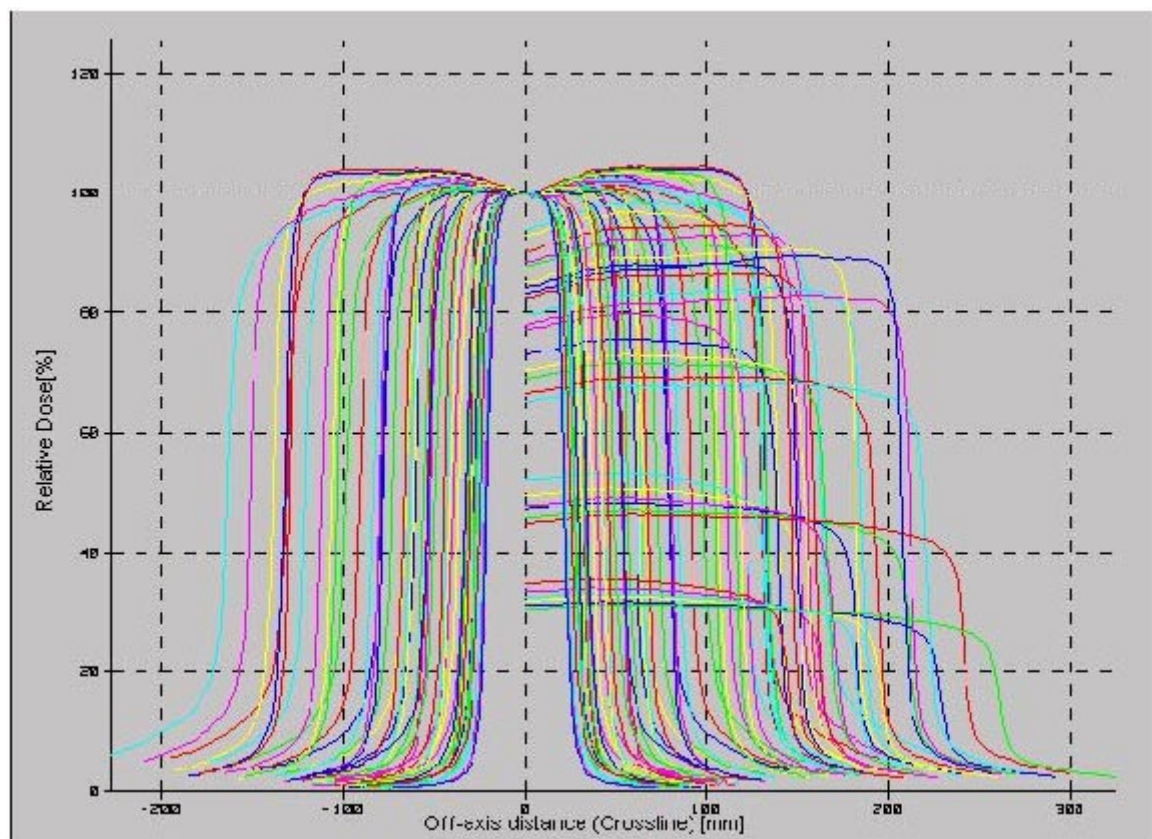
- Fatores Output para campos abertos
- Fatores Output para campos com filtro ou fator único para filtro

## Medidas do Fator Output

|   | PDD normalization      | Monitor unit calibration | Measurement position                   |
|---|------------------------|--------------------------|--|
| 1 | $d_{\max}$             | Fixed SSD                | $d_{\max}$                             |
| 2 | single reference depth | Fixed SSD                | $d_{\max}$ of the reference field size |
| 3 | $d_{\max}$             | Isocentric               | Isocentre                              |
| 4 | single reference depth | Isocentric               | Isocentre                              |



## PERFIL DO FEIXE - Medidas



## Transferência de Dados: Sistemas de Aquisição e Planejamento



- Manual
- FTP
- RS 232
- DAT, floppy, CD

## Configuração da Máquina



- 1 - Treatment unit parameters
- 2 - Treatment unit limits
- 3 - Print unit parameters and limits
- 4 - Depth dose configuration
- 5 - Profile configuration
- 6 - Material configuration
- 7 - TAR/TMR, SAR/SPR and PSF table
- 8 - Scatter factors for EqTAR
- 9 - Configuration regular beam model
- 10 - Configuration pencil beams
- 11 - Monitor unit table
- 12 - Dynamic wedges
- 13 - Configure VARIs equivalents
- 14 - Select treatment unit
- 0 - Return █

```

POSITION LIMITS :                               1/0

Fixed therapy : B.F
Name of the treatment unit : C:mas 21200 - 1849
Treatment unit rotation scale : TRG : TR : TRG
Gantry rotation scale : 0.0 : 180.0 004 00K :
Collimator rotation scale : 90.0 : 90.0 04 00K :
Table rotation scale : 90.0 : 90.0 04 00K :
Gantry rotation limits : 0k :

Collimator rotation limits (K): IUS  J0.0  -> 273.0
                               (JLC  J0.0  -> 273.0)
Table rotation limits (K): TUS  33.3  -> 273.0
                               (TFC  33.3  -> 273.0)

Table height - at isocentre : 10.0 cm
Table height - minimum : 10.0 cm
Table height - maximum : 15.0 cm
Flattener jaws axes : (X1) : (Y1)
                   (X2) : (Y2)

Field opening : 0 -> 40  J -> 40

Isocentric X - max overtravel : 10.0 cm 10.0 cm
Isocentric Y - max overtravel : 10.0 cm 10.0 cm
Flattener direction names : (5) : (4)
                          TN : (L) (R) (D)

```

```

POSITION LIMITS :                               2/0

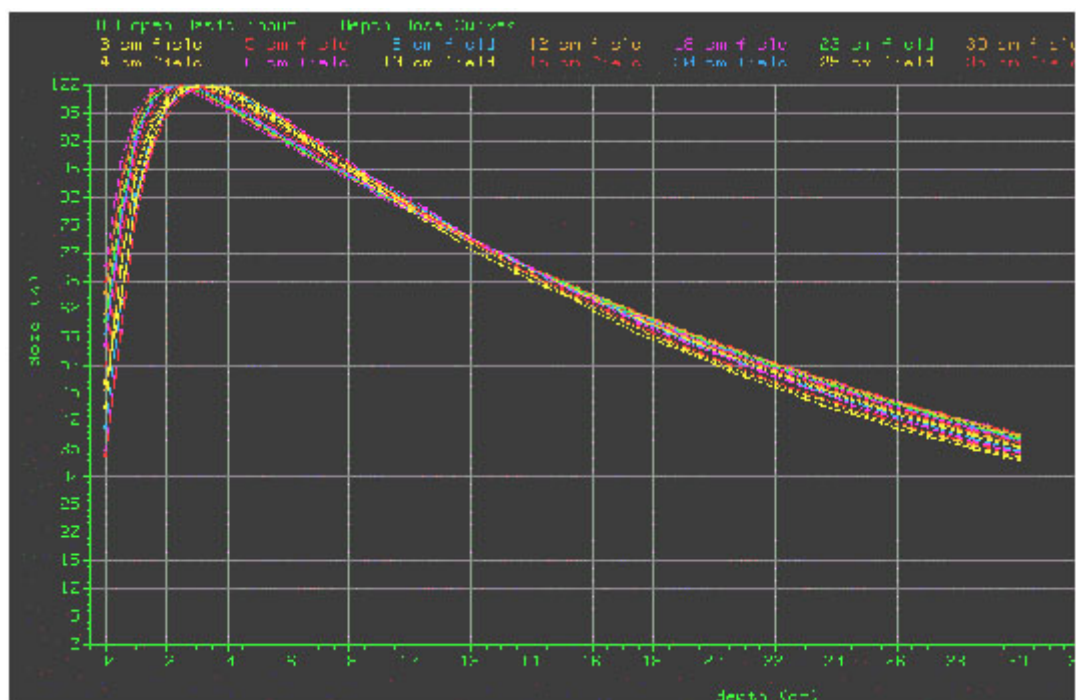
Fixed therapy : B.F
Name of the treatment unit : C:mas 21200 - 1849
Flattener direction names : (R) : (L)
                          (N) : (U) : (D) : (S)

Flattener wedge front row
- wedge 15 : R L J D
- wedge 30 : R L L R
- wedge 45 : R L J D
- wedge 60 : R L J D
- wedge Lk : R L J D

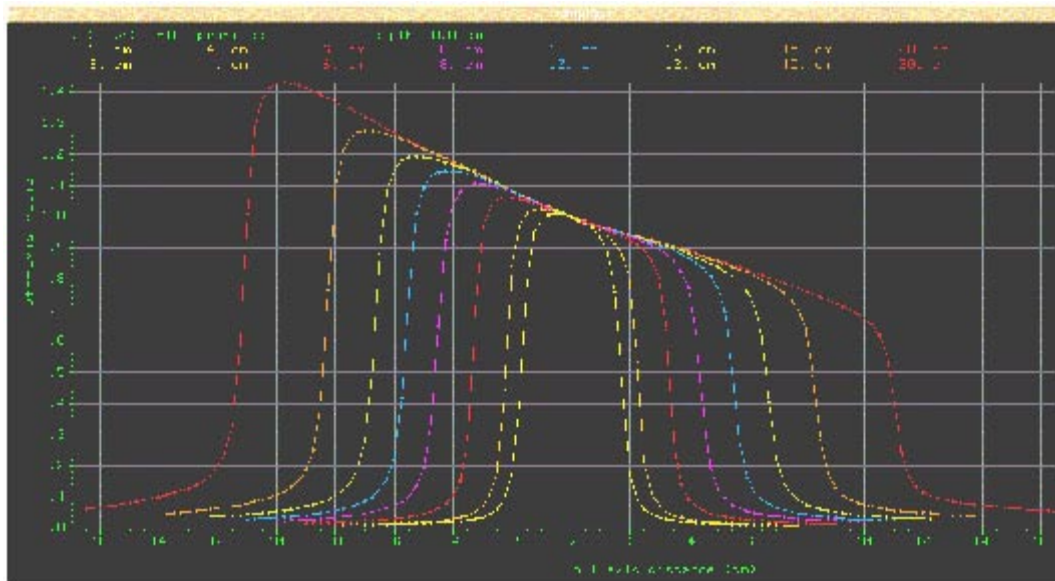
Wedges fields with : lateral : depth (cm)
- wedge 15 : 0 -> 10  J -> 40
- wedge 30 : 0 -> 20  3 -> 40
- wedge 45 : 0 -> 10  J -> 40
- wedge 60 : 0 -> 5   3 -> 40
- wedge Lk : J L : tables

```

## PDP's Medidas



## Profile – Filtro 45°



## Élétrons

