Electron Block Creation

Here the user can create and edit Electron Blocks for the selected beam as well as edit values for an existing block.

•	Beams		
Π	reatment Machine		VarianTrueBeam
=	Electron Beams		
	b1 : G341 C285 CL0	; 6x6 iso: (-0.4, -34.2, 8.0)	
	Beam Information Description: Target: Gantry Angle: Couch Angle: Collimator Angle: SSD: Beam Energy: Beam Normalization: Normalization Type: Applicator: Block: Bolus: Bolus Type: Intensity Modulator: Skin Collimator: MU:	nose 341 deg 285 deg 0 deg 100 cm 9 MeV 54 Gy Structure: nose; Type: Vol 90 6x6 1-G341C285-eIM-C55505 1-G341C285-EB-C55505 Structure as Bolus yes none 863.04	9%
			Cloné Edit Delete
			Create New Electron Beam

Fig. 1: Block size selection

Block Size

• **Size:** Select the block size. The list of available block sizes is derived from the list of applicator (cone) sizes available for the selected machine. Applicator sizes can be enabled and disabled from editing the machine data in the site configuration.

Note: When first creating a beam the eRT app will auto calculate the smallest block that will fit the current aperture shape.

▼ Collimatio	on .				
Use Skin Collimation					
Block Size					
Size:	6x6 🔻				
Description:	6x6				
	10x10				
	15x15				
📃 Use Primiti	20x20				
Target Margin	25x25				
Margin:	- 1 + cm				
Avoidance St	ructures				
Add Structure	•				
Manual Edits Enable					
snape Smoot	ning				
Level:	- 10 +				

Fig. 2: Block size options

Note Selecting a block size that is too small for the aperture shape will cause an error that will not allow the creation/saving of the beam until an appropriate size is selected.

▼ Collimation	
A Invalid block size for selected target	
Use Skin Collimation	
Block Size	

Fig. 3: Block size too small

• **Description:** An optional description for this block used to identify it.

Target Margin

• **Margin:** The value (in cm) of the margin around the target structure as projected to isocenter. A negative margin can be used to specify a contraction around the beam target while positive values will cause an expansion.

Note: The app will automatically recalculate and display changes to the block as the margin is edited.



Fig. 4: Block target margin

Avoidance Structures

The user may select one or more structures in the structure list here to add as an avoidance structure. Avoidance structures will decrease the block opening to remove all areas within the projection of the structure.

Add Structure	•	
PTV		
PTV 6840		
Rt Parotid		ianu
Cord		
Cord+5		
Ant avoid		
Post avoid		
Rt Eye		
Lt Eye 🗟		
External		
BOLUS 1CM		
ptv p5		
ptv p20		
nose		
90 % (Trial_1)_1		
Electron Bolus		

Fig. 6: Avoidance structure selection

Once the structure is selected you will be able to set the values for how it should be avoided. Including:

• Avoidance Margin: required, sets the margin of avoidance around the selected structure's projection to the isocenter plane.



Fig. 7: Selected avoidance structure

• Force min target margin: disabled by default, when enabled it will force a minimum margin around the target taking priority over the settings of the avoidance structure.

For example: As you can see below, there is an overlap between the margin set for the avoidance structure and our target structure. Since "force min target margin" is disabled, the avoidance margin has

priority over the target.

ObeCIMOI eRT - ECT Nose Place] + 3	Daniel Patenaude (1234)
View Sugital Control Diff Statistics Divide Compositions Otho + 30 30 + 8EV Otho + 30 30 - 8EV Otho + 30 30 - 8EV Otho + 0.041 Otho + 50e Line Constrait Israyst now C	
Create Electron Beam Contain Electron Beam	
Central target ross C Controls/Options General Explores General Explores	
General Display Option	
Approach CU56 dag, CU dag, CLI dag	
Energy Selection energy 5 MeV	
Ibid Bodie	аса аса см 4.11.1 kks - -

Fig. 8: Force min target margin is off

If the user decides that the target should have priority over the avoidance structure we can enable the "force min target margin" and set a min margin for our target. As you can see below the min margin set takes priority over our avoidance margin and there is no more overlap.



Fig. 9: Force min target margin is on

 Occlude by target: You may also choose to occlude the structure by the target or not using the "Occlude by Target" option. For the following examples we will use the Urethra as it shows a dramatic example of differences of using or not using the "Occulde by Target" option. A 5mm margin was applied to the Cord for the following examples.

▼ Collimatio	n					
Use Skin Collimation						
Block Size						
Size:	20x20		•			
Description:						
Target Margin						
Margin: - 1 + cm						
Avoidance Structures						
Cord	٠	- 0	Occlude by	Target		×
Avoidan	ce Margin:		0.5	+ cm		
Foro	e Min Target Margin:			+ cm		
Add Structure	•					

 By checking the "Occlude by Target" box you are choosing to give the target priority over the structure in the view you are looking at in the BEV. In other words the visible target (target in front of this structure) will not be blocked by the aperture. Note that just the inferior edge of the Cord is blocked by the aperture. The part of the Cord that is behind the PTV is not blocked.



• If you leave the "Occlude by Target" unchecked, you are choosing to give the structure priority over the target. This means you will block the entire structure regardless of its position relative to the target. In this example the aperture blocks out all of the Cord.



Manual Edits

By default manual editing of the block shape it disabled, but a user can elect to enable the ability to manually change the block shape.





Once manual editing has been enabled you will see the cursor update to reflect the editing tool. You can choose to edit with the Brush cursor or by drawing straight lines using the Line tool. Both take in the radius that can also be set by the user to alter the size of the editing tool.

Note: Drawing on the "Exterior" of the aperture shape will shrink the shape of the block as can be seen below.



Fig. 11: Shrinking the block shape

Note: Drawing from the "Interior" of the aperture shape will expand the shape of the block as can be seen below.



Fig. 12: Expanding the block shape

Shape Smoothing

• Level: Sets the level of smoothing applied to the block shape.

Note: The app will automatically recalculate and display changes to the block based on the set smoothing level.



Fig. 13: Setting the smoothing level for the block

From: https://apps.dotdecimal.com/ - decimal App Documentation

Permanent link: https://apps.dotdecimal.com/doku.php?id=electronrt:userguide:tutorials:electron_blocks&rev=1607298389

Last update: 2021/07/29 18:24