

# Electron Bolus Creation



A user is able to add an electron bolus to their beams to aid in proper distribution of dose.

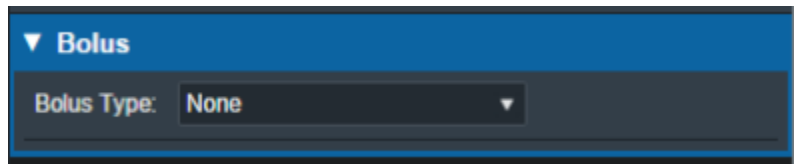


Fig. 1: Beams Block

There are four options for boluses in the electronRT app as defined below:

## Optimized Thickness Bolus

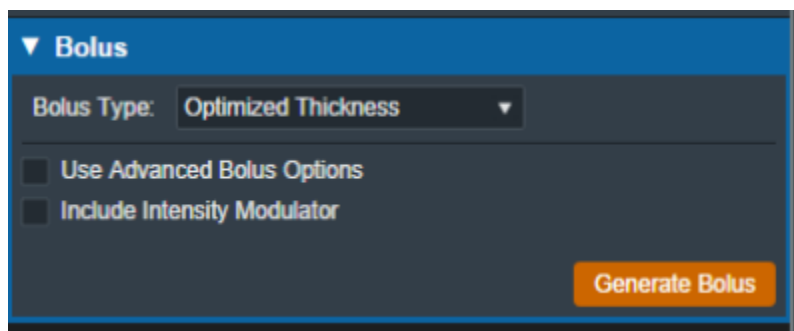


Fig. 2: Beams Block

The screenshot shows the 'Bolus' configuration panel. At the top, 'Bolus Type' is set to 'Optimized Thickness' and 'Bolus Material' is 'Blue Wax'. Below these, 'External Structure' is 'Use course external' with a sub-label 'skin (External)'. 'Add New Operator' is set to 'Automated Marching'. A section titled 'Bolus Geometry Options' contains several input fields: 'Block Outer Border' (1 cm), 'Target Inner Border' (0.2 cm), 'Depth Beyond Target' (0.5 cm), 'Minimum Thickness' (0.2 cm), and 'Distal PTV Smoothing' (0 cm). There is a checkbox for 'Include Intensity Modulator' and a link for 'Bolus Design History'. At the bottom right, there is an orange 'Generate Bolus' button and a link 'Hide Advanced Bolus Options'.

Fig. 4: Beams Block

This screenshot shows the same 'Bolus' configuration panel as Fig. 4, but with the 'Add New Operator' dropdown menu open. The menu lists several options: 'Automated Marching' (which is highlighted), 'Geometric Sequence', 'Single Shift Sequence', 'Double Shift Sequence', 'Create', 'Smooth', 'Isodose Shift', 'Truncate', 'Specified Shift', and 'Intensity Modulation'. The 'Generate Bolus' button is now greyed out. A 'clear all' link is visible near the bottom right, and the 'Hide Advanced Bolus Options' link remains at the bottom.

Fig. 3: Beams Block

**▼ Bolus**

Bolus Type: **Optimized Thickness** ▼

☒ Use Advanced Bolus Options

Add New Operator: **Automated Marching** ▼

**Bolus Geometry Options**

Block Outer Border: **1** cm

Target Inner Border: **0.2** cm

Depth Beyond Target: **0.5** cm

Minimum Thickness: **0.2** cm

Distal PTV Smoothing: **0** cm

☐ Include Intensity Modulator

**▼ Bolus Design History**

No bolus operators

clear all

**Generate Bolus**

Fig. ##: Beams Block

Add New Operator: **Automated Marching** ▼

**Bolus Geometry Options**

Block Outer Border:

Target Inner Border:

Depth Beyond Target:

Minimum Thickness:

Distal PTV Smoothing:

☐ Include Intensity Modulator

**▼ Bolus Design History**

- Automated Marching
- Geometric Sequence
- Single Shift Sequence
- Double Shift Sequence
- Create
- Smooth
- Isodose Shift
- Truncate
- Specified Shift
- Intensity Modulation

Fig. ##: Beams Block

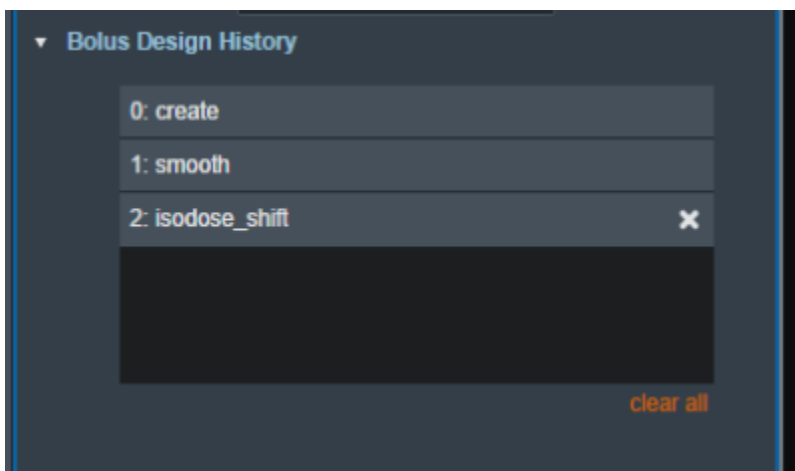


Fig. 5: Beams Block

## Uniform Thickness Bolus

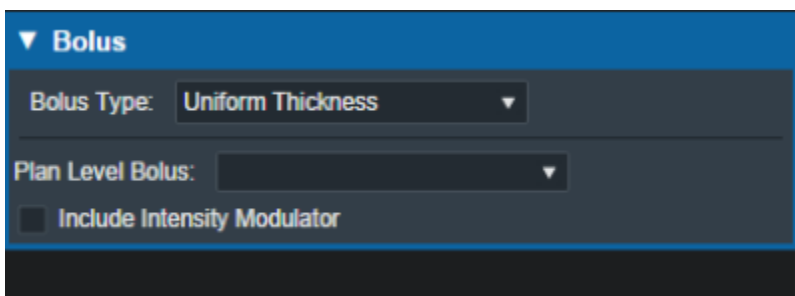


Fig. 8: Beams Block

## Bolus as a Structure

The user also has the option to instead include a bolus as a separate structure in the structure list. Once the option is chosen the user will be able to find the bolus structure from the drop down structure list and the app will set it as the bolus for this beam.

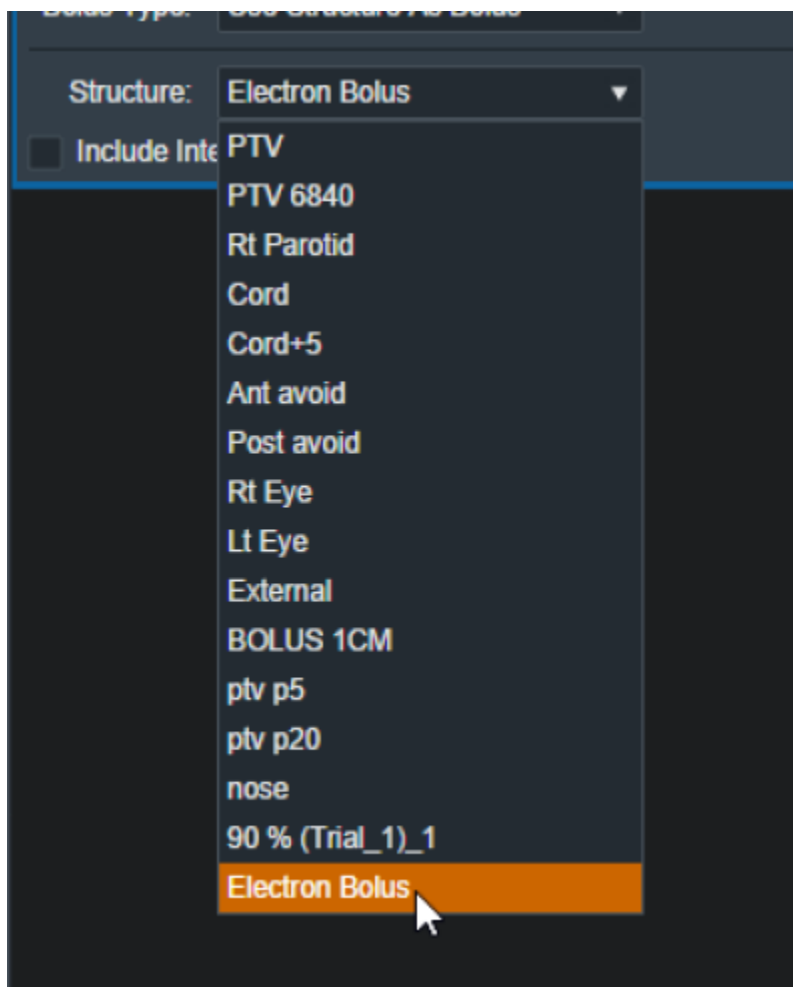


Fig. 9: selecting from the structure list

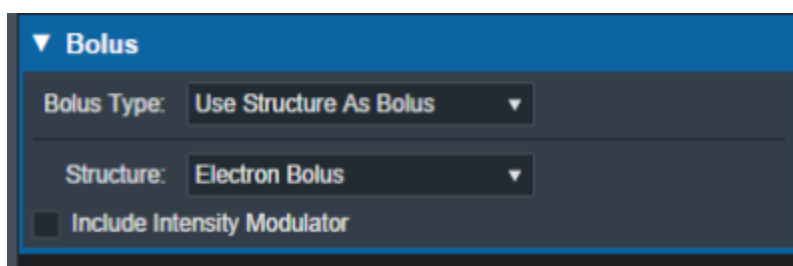


Fig. 10: selecting a Bolus as a structure

Once the structure is selected the bolus will be added to this beam and dose re-calculated as expected.

**Note:** The bolus is displayed in the BEV for this beam even though the “Electron Bolus” structure is hidden through the right hand side controls. This shows that the displayed bolus is added as a bolus on this beam and not appearing as a structure.

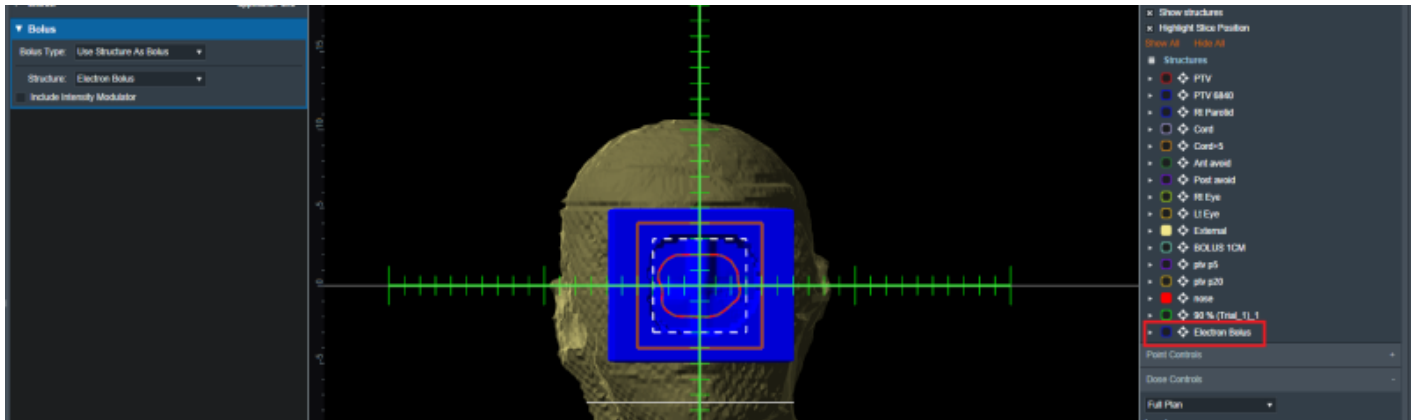


Fig. 11: Bolus in BEV

If you wish to import a bolus that is not currently in your structure list please refer to the [DICOM Patient Import](#) section of the user guide for how to re-import a structure set.

## IMET Device

Additionally if any type of bolus is added to a beam the user is able to also include an intensity Modulator by simply selecting the option below any bolus type. The application will calculate the device and display it in the beams UI.

**NOTE:** In order to add an IMET device the selected beam **MUST** have a valid bolus first.

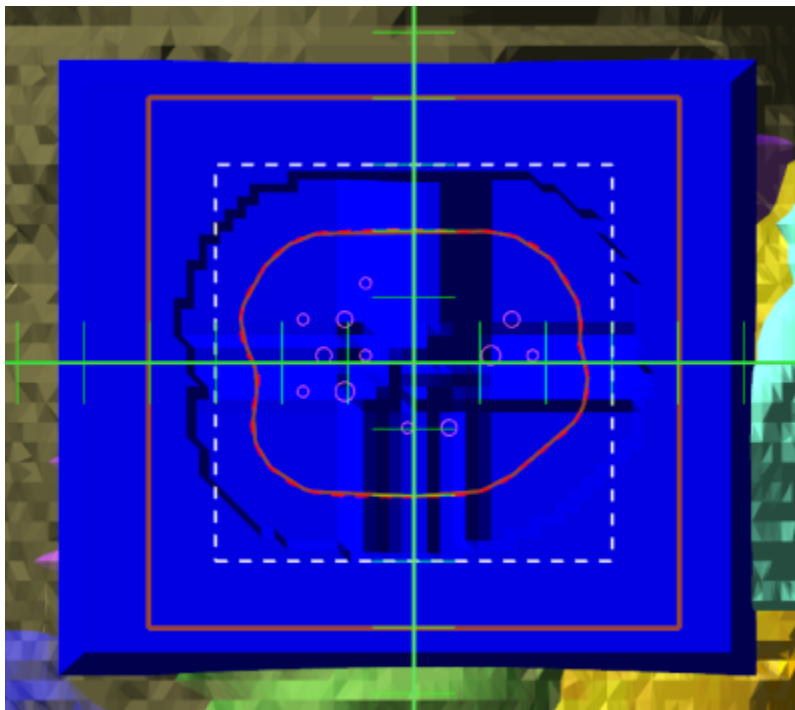


Fig. 12: BEV IMET

And as with a bolus the device can be hidden and un-hidden from the display using the beam controls on the right hand side.

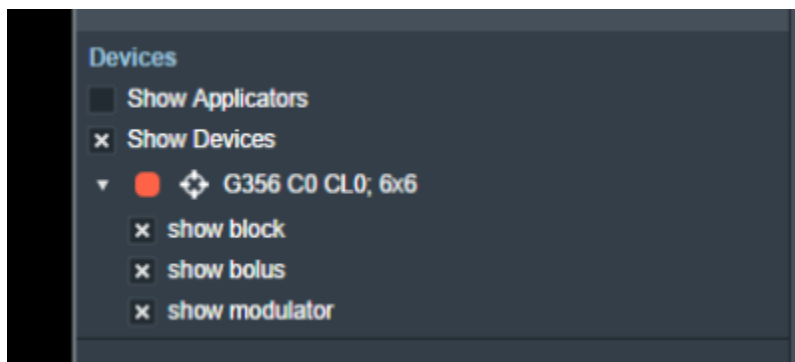


Fig. 14: RHS options to hide/show devices

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