

# Fraction Groups

Defining **Fraction Groups** is the first step in the PBS Optimization process within Astroid. Most commonly, a fraction group is simply an arrangement of beams that will be used in a typical daily treatment fraction. The Fraction Group contains some basic group information, as well as Fraction Group level constraints and collections of *Beam Sets*, referred to as *Beam Set Groups*. The *Beam Set* and *Beam Set Group* are key concepts within Astroid that allow for high levels of control over the Astroid PBS Optimization engine. Further details of these critical items are provided below and additionally, examples of some common cases and how fraction groups, beam set groups, and beam sets can be constructed to

meet the clinical needs of various clinical cases can be found  here.

- **Color:** Display color of the *Fraction Group*
- **Description:** Optional, user specified text describing the *Fraction Group*
- **Fraction Count:** The total number of fractions to be delivered for this *Fraction Group*; this is very important as it will determine the appropriate Monitor Units for the individual beams
- **Group Constraints:** Describe the FG Level Constraints 

## Beam Set Groups

Discuss beam set groups here...

### Beam Sets

Discuss beam set groups here...

### SFO Beams



I think it might be worth mentioning the difference between making an SFO and IMPT beam in the fraction group (e.g., when a beam is in it's own beamset in the FG, it's SFO. When with other beams in the same beamset, all the beams in the beamset are optimized together). -Daniel

### IMPT Beams



See above -Daniel

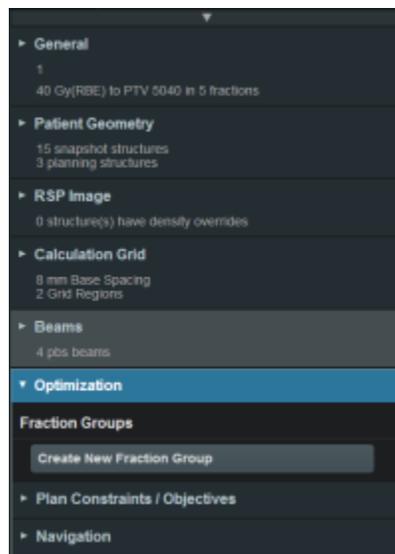
## Beam Set Level Constraints



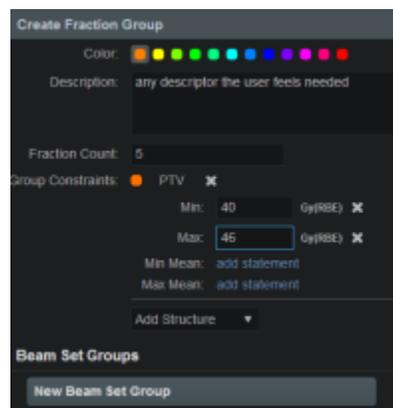
Mention the difference for constraints at the FG level and at the beamset group level. Constraints at the FG level apply to all beams at a whole, where the constraints at the beamset level have their dose values divided by how many beams are in the beam set (Kevin can explain this very well). - Daniel

## Working with Fraction Groups

1. Select the Create New Fraction Group button



2. In the newly opened block the planner will:
  - choose the color the fraction will be denoted in
  - type in any descriptor that may be needed
  - enter the total number of fractions to be treated
  - enter the group constraints
    - group constraints encompass the whole fraction group



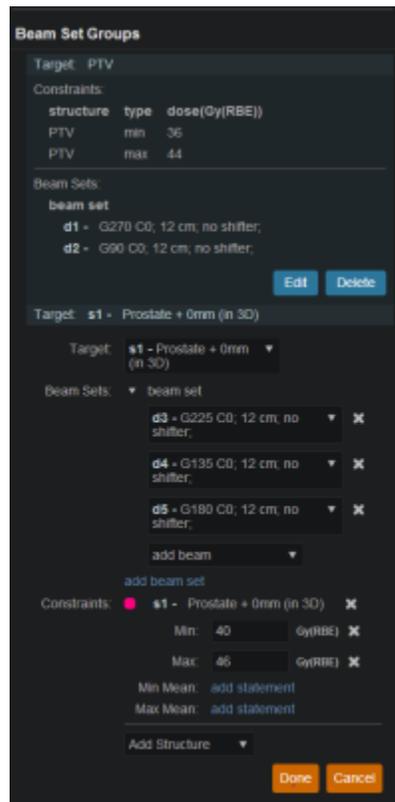
- there can be more than one target entered at this stage

### 3. Select New Beam Set Group

- select the target and create a beam set that will be associated to that target
- there may be multiple beam sets associated to a target
- the constraints chosen at this point will just be associated to the particular beam set



- the user may also have multiple beam set groups associated with multiple targets within a plan



- the user needs to set the constraints for each beam set group. These constraints only apply to the associated beam set group

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