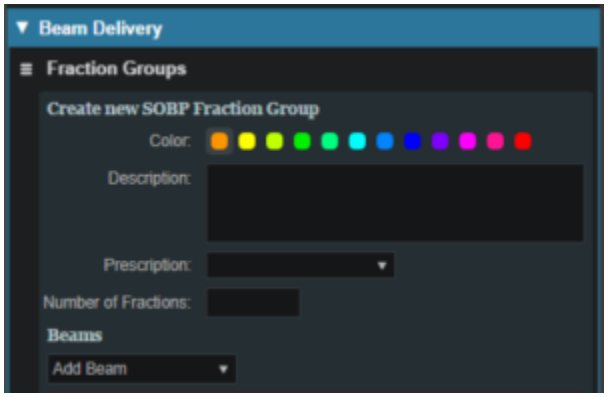
Beam Delivery (SOBP)

Fraction Groups

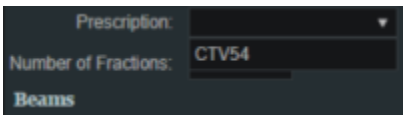
Defining *Fraction Groups* is the first step in the SOBP Optimization process within Astroid. Most commonly, a fraction group is simply an arrangement of beams that will be used in a typical daily treatment fraction. The Fraction Group contains the *Beam Set* where each beam can be weighted and normalized based on the needs of each case. These are key concepts within Astroid that allow for high levels of control over the Astroid SOBP Optimization engine. Further details of these critical items are provided below.

- To get started, navigate to the *Beam Delivery* block and click *Create New Fraction Group*.

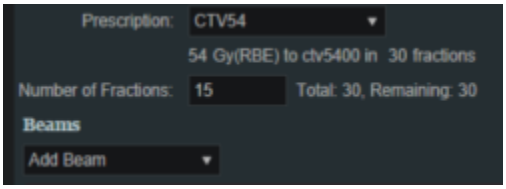
General Fraction Group Data



- **Color**: Display color of the *Fraction Group*
- **Description**: Optional, user specified text describing the *Fraction Group*
- **Prescription**: Prescription that the *Fraction Group* implements; note that only targets containing dose statements from this Prescription will be available when selecting the Target for the Fraction Group

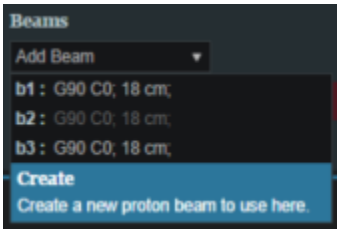


- **Number of Fractions**: The total number of fractions to be delivered for this *Fraction Group*; this is very important as it will determine the appropriate Monitor Units for the individual beams

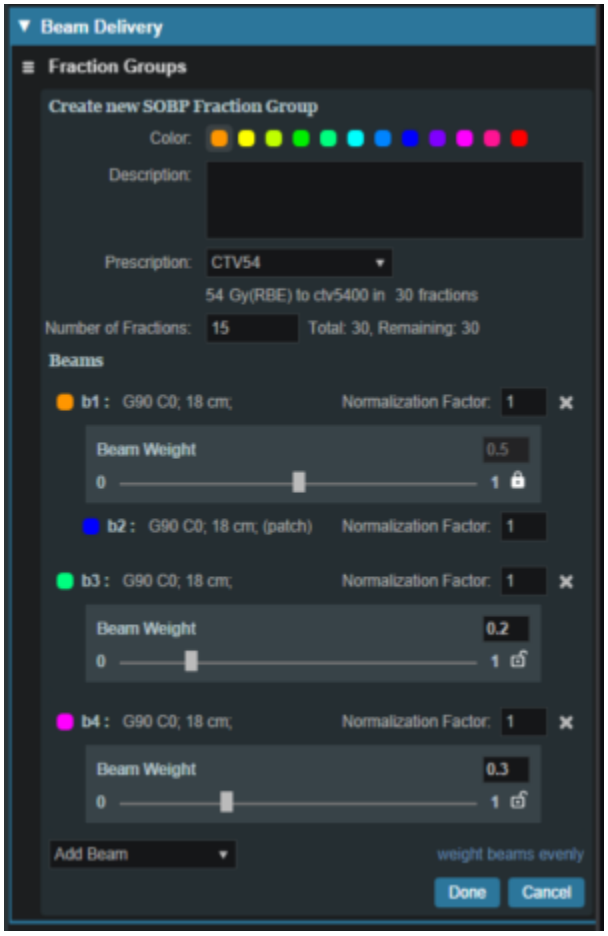


Beam Options

- Select the beams to be added to this fraction group from the drop down list. Repeat this process as necessary. Notice how a one the beams in the image below is grayed out. This means that the beam has already been selected or it is a *patch beam*. If it is a patch beam, the beam will automatically be added with its parent beam. There is also the option to create a new beam from the drop-down list.



- Change the normalization factor by clicking its box and entering the value desired.
  - This is independent from the weight values.
  - Available as an option for patch beams
  - Useful when adjusting hot or cold areas where beams treat the same area or meet.
- Weight each beam by either sliding the slider or clicking on the weight value box and type in the value.
  - The value of all beams listed **MUST add up to 1.0** (100%).
  - By default, the beams are automatically weighted evenly, and, if edited, can be reset by clicking the *weight beams evenly* option.
  - Use the *Beam Lock* (not available for patch beams) to restrict a beam from automatically adjusting when another beam's weight is adjusted. This option is useful to secure one beam's weight while adjusting the other beams' weights (see image below). The sum of all weights still must equal zero.



- When finished, click the *Done* button. Clicking the *Cancel* button will reset the changes made to the current fraction group and return the *Beam Delivery* block to its previous state.
- Repeat process of adding fraction groups until all remaining fractions are completed.