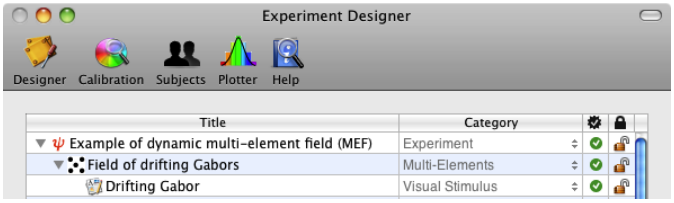
Creating a Field of Drifting Gabors

This **Psykinematix** tutorial shows how to create a field of drifting Gabors using the "**Multi-Elements**" panel.

Step 1: Creating the Experiment Hierarchy

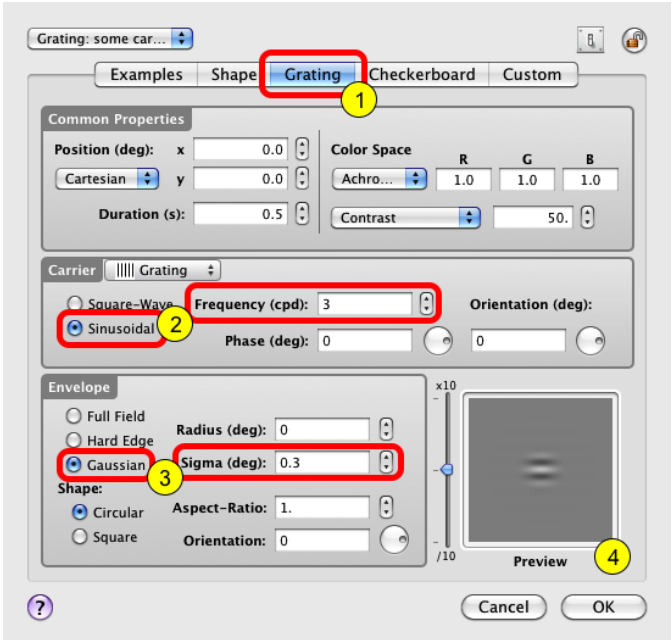


First, create the above events hierarchy in the "Experiment Designer" panel (see the "**Contrast Sensitivity: Lesson 1**" or "**Orientation Discrimination: Lesson 1**" tutorial to learn more about how to create this events hierarchy).

This hierarchy specifies an experiment that simply shows a field of multi-elements composed of drifting Gabors. The events still need to be customized in terms of spatial and temporal properties as detailed in the steps below.

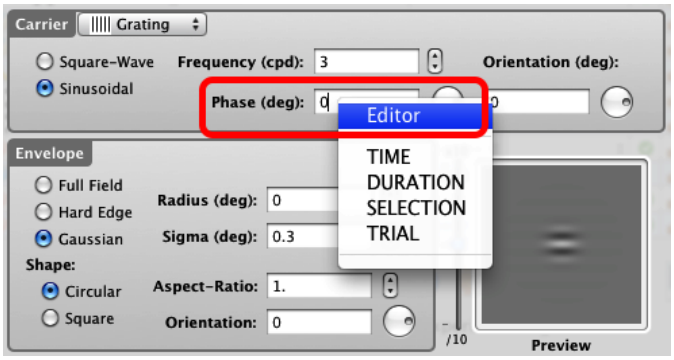
Step 2: Creating a Gabor Stimulus

Select the "Drifting Gabor" event and click on the properties button (or Apple-i). The panel above will open. Click on the "**Grating**" tab to select the "Grating Stimulus" type (1). From there, you can create a Gabor stimulus by specifying a **Grating carrier** with a **sinusoidal** modulation at a given **spatial frequency** (2), and specifying a **Gaussian envelope** with a given spatial extent "**sigma**" (3). A preview of the specified stimulus is always displayed in the Preview box (4).

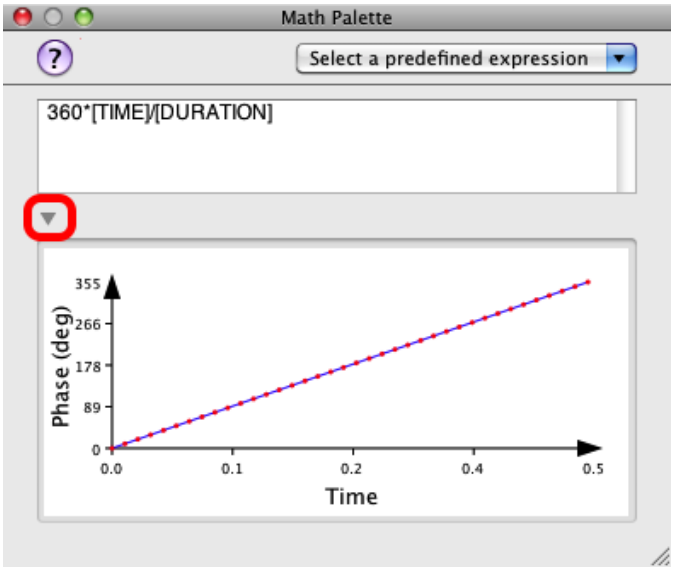


Step 3: Adding a Drifting Motion

The drifting motion of the Gabor can be created by specifying a phase of the sinusoidal carrier that changes linearly over time. To do so you can either edit directly the **phase** text field and enter the following expression: *360 * [TIME] / [DURATION]* , or use the expression editor by control-clicking on the text field and selecting the **Editor** option in the contextual pop-up menu.



If using the editor, enter the same expression (*360 * [TIME] / [DURATION]*) in the text field and click on the small arrow to reveal a graphical representation of a time expression. Note that each red dot on the blue line represents the expression value for each display frame.

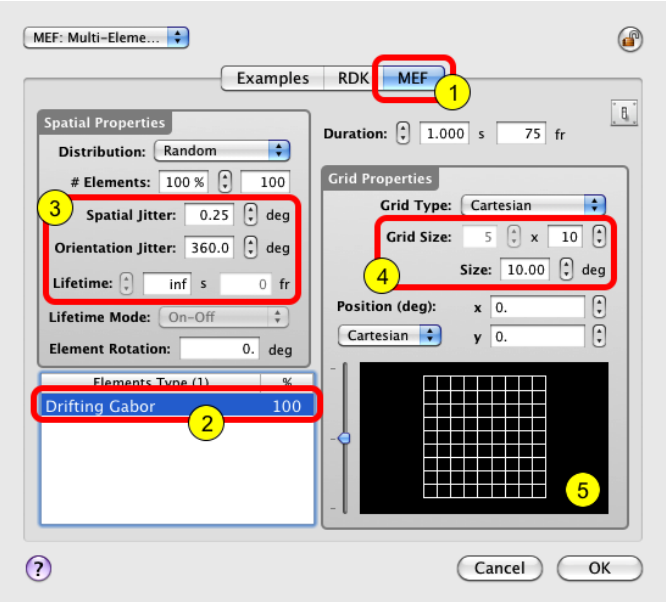


In the above expression, **[TIME]** represents the built-in time variable relative to the stimulus onset, and **[DURATION]** represents the built-in duration variable for the currently edited stimulus. Hence, this expression specifies a spatial phase in degrees starting from 0 at the stimulus onset to 360 at stimulus offset, corresponding to a full cycle shift for the stimulus duration. Note that the built-in variables, [TIME] and [DURATION], have to be specified in uppercase because they are system-defined variables.

Click on the "OK" button to validate the change and close the properties panel for the Gabor stimulus.

Step 4: Customizing the Multi-Element Field

Select the "Field of drifting Gabors" event and click on the properties button (or Apple-i). The panel above will open. Click on the "**MEF**" tab to select the "Multi-Elements Field" type (1). From there, you can customize the appearance of the elements field composed of the drifting Gabors: select the "Drifting Gabor" in the table (2), specify the spatial and orientation jitters to apply to each Gabor element in the grid and set their lifetime to infinity (*inf* value), specify the grid in terms of the total number of elements and its overall size. The grid appearance is always displayed in the Preview box (5).



Step 5: Watching the Dynamic Field

You can now either run the experiment, preview the dynamic stimulus, or export it as a movie!