Orientation Discrimination: Lesson 5

You will learn how to create time-varying stimuli and produce interleaved stimuli at the display frame rate.

1ST-ORDER DRIFTING GABOR

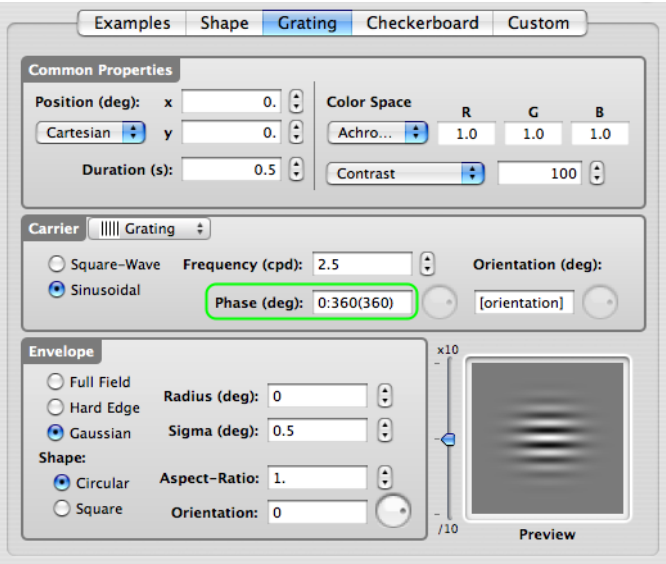
This lesson makes the basic orientation discrimination task more elaborate by displaying a 1st-order drifting Gabor stimulus on a 2D noise background.

First, duplicate the original experiment, rename the copy ***Orientation Discrimination 5***, and move it to the top of the **Designer** table. Reveal its whole hierarchy by option-clicking on its arrow.

Step 1: Creating a Drifting Stimulus

Rename the ***Gabor*** stimulus ***Drifting Gabor*** and edit its properties.

The drifting motion is created by specifying a time-varying spatial phase: enter ***0:360(360)*** in the phase text field of the carrier, as illustrated. This tells the phase to go from 0 to 360 deg (range defined by minimum and maximum values separated by a colon) at a speed of 360 deg per second (speed defined between parentheses). This corresponds to a drifting speed of 1 cycle per second.



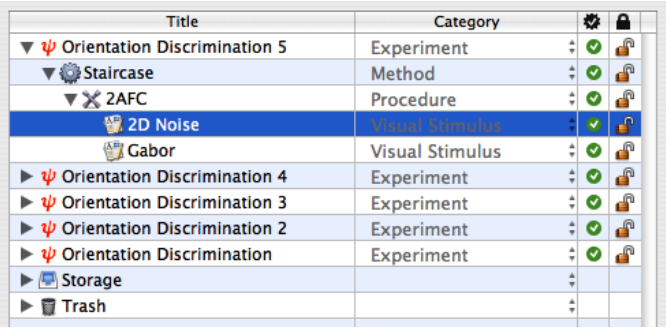
Click on the **OK** button to validate the changes and return to the **Designer** panel.

Check & run the experiment now to test it without the presence of a noise background.

Tips*: There are alternative ways to create a drifting Gabor using the Phase parameter:*
- Using an expression based on the ***[TIME]*** *variable, for example* ***360*[TIME]*** *instead of* ***0:360(360)*** *to produce the same smooth motion*
- Using ***0:4:270(0.125)*** *to create apparent motion so the spatial phase jumps in a discrete manner through 4 steps (0, 90, 180, 270), each presented for 0.125 second*

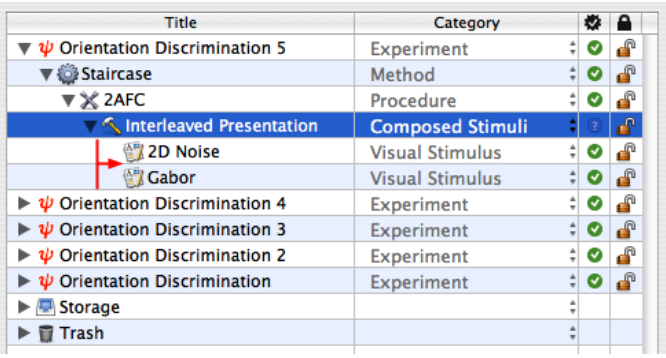
Step 2: Adding a 2D Noise Stimulus

Similarly to what you did in **Orientation Discrimination Lesson 3**, create a 2D noise stimulus with a radius of ***2*** deg. Name it ***2D Noise*** and move it above the ***Gabor*** stimulus.



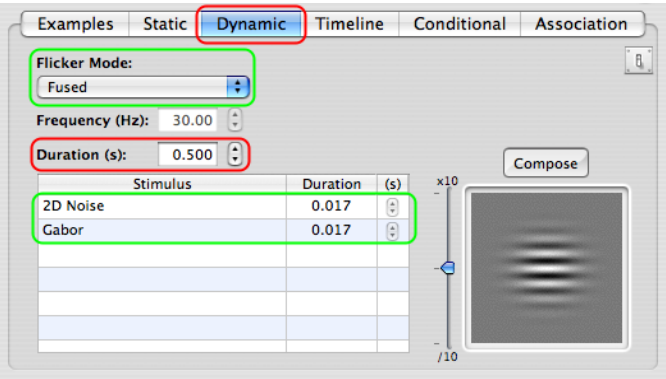
Step 3: Adding a Dynamic Composing Event

Select the ***2AFC*** procedure and insert a new **group** event using the '**+**' folder icon. Set the name and category of this new event to ***Interleaved Presentation*** and **Composed Stimuli**, respectively.



Select the two stimuli (***2D Noise*** and ***Gabor***) and drag & drop them onto ***Interleaved Presentation,*** so they appear indented, as illustrated.

Edit the properties of the ***Interleaved Presentation*** event and select the **Dynamic** tab.



Select the ***Fused*** option in the **Flicker Mode** pop-up menu and set the overall **Duration** to ***0.5*** s.

The table presents the visual stimuli to be interleaved. Due to the selected **Fused** mode, their individual duration should correspond to the duration of a single display frame based on the display settings applied to the currently edited **Experiment** event (0.017 seconds in this example corresponding to a frame rate of 60 Hz). Note that the **Frequency** text field reflects the equivalent flickering frequency.

Click on the **OK** button to validate the changes and return to the **Designer** panel.

Check & run the Experiment!

Conclusion

In this lesson you learned how to create time-varying stimuli and interleave stimuli at the display frame rate.

Now that you have completed the whole tutorial on orientation discrimination you should be ready to design your own experiments!