

# EXPERIMENT STIMULI DETAILED DESCRIPTIONS

## Sinusoidal motion visual stimuli [s1]

The screen width is 34.5 cm and the height is 19.5 cm. The horizontal resolution is 1920 px and the vertical resolution is 1080 px. The user's distance from the screen is set at 50.0 cm.

The display monitor refresh rate is 60 FPS, each frame lasts 16.66 ms.

The sine wave parameters are: Amplitude (A): 11.034209 deg; Frequency (f): 0.2 Hz; Period (T): 5.0 s; velocity (v): 2.6155162 deg/s; wavelength ( $\lambda$ ): 13.07758 deg.

Each trial lasts 15.0 seconds. The wave completes 3.0 cycles in each trial (2 trials, 1 for each direction, 6 cycles in total). The initial focus-on-target routine lasts 1.0 s. The total length of the session is 31.0 s.

The target picture path is "/ladybug.svg"; The target size is 1.0 deg.

## Triangular motion visual stimuli [s2]

The screen width is 34.5 cm and the height is 19.5 cm. The horizontal resolution is 1920 px and the vertical resolution is 1080 px. The user's distance from the screen is set at 50.0 cm.

The display monitor refresh rate is 60 FPS, each frame lasts 16.66 ms.

The triangle wave parameters are: Amplitude (A): 11.034209 deg; Frequency (f): 0.2 Hz; Period (T): 5.0 s; velocity (v): 2.6155162 deg/s; wavelength ( $\lambda$ ): 13.07758 deg.

Each trial lasts 15.0 seconds. The wave completes 3.0 cycles in each trial (2 trials, 1 for each direction, 6 cycles in total). The initial focus-on-target lasts 1.0 s. The total length of the session is 31.0 s.

The target picture path is "/bee.svg"; The target size is 1.0 deg.

## Step-Ramp pursuit visual stimuli [s3]

The screen width is 34.5 cm and the height is 19.5 cm. The horizontal resolution is 1920 px and the vertical resolution is 1080 px. The user's distance from the screen is set at 50.0 cm.

The display monitor refresh rate is 60 FPS, each frame lasts 16.66 ms.

The step is 3.0 deg; the pursuit limit is 15.0 deg

The array of velocity profiles of the target (in deg/s) for each randomized test are:

- Test Randomized\_1: [ -8.0, 4.0, -4.0, 8.0, -8.0, 8.0, -4.0, 4.0 ]
- Test Randomized\_2: [ 4.0, -4.0, 8.0, -4.0, 4.0, -8.0, -8.0, 8.0 ]
- Test Randomized\_3: [ -4.0, 8.0, -4.0, -8.0, 4.0, 8.0, 4.0, -8.0 ]

The number of trials per velocity is 2, the number of velocities is 2, the number of directions is 2. The total number of trials in the experiment is 8.

The target is displayed at the center of the screen between 1000.0 ms and 2000.0 ms.

The total experiment duration ranges from 20.0 seconds to 40.0 seconds.

The target picture path is "/snail.svg"; The target size is 1.0 deg.

## Visually guided saccades visual stimuli [s4]

The screen width is 34.5 cm and the height is 19.5 cm. The horizontal resolution is 1920 px and the vertical resolution is 1080 px. The user's distance from the screen is set at 50.0 cm.

The display monitor refresh rate is 60 FPS, each frame lasts 16.66 ms.

The central target duration is between 1000.0 ms and 2000.0 ms.

The peripheral target duration is between 1000.0 ms and 2000.0 ms.

The total experiment duration ranges from 30.0 s to 60.0 s.

The distance of the peripheral target from the central target ranges between 5.0 deg to 15.0 deg.

The array of displacement profiles of the target (in deg) are:

- Test Randomized\_1: [ 14.832732, -9.743024, 5.970555, -11.630829, 8.985348, -6.670554, 12.401097, -14.475862, 13.471872, 13.548758, -7.14576, -14.06731, -10.945073, 14.758865, 12.54543 ]
- Test Randomized\_2: [ 11.19659, -11.230872, -7.2530355, -5.1153092, -8.695057, 5.495724, -10.51643, -8.251087, 6.223626, 9.082907, 10.843807, -14.971769, 13.415259, 11.896386, 12.722762 ]
- Test Randomized\_3: [ -6.2812967, 14.379347, 7.3835897, 7.3666596, 10.319616, -11.062942, 9.729986, 6.780423, -11.380352, -8.600257, -5.5837626, 13.622085, -9.637011, -6.6532755, 7.743903 ]

The target picture path is "/butterfly.svg"; The target size is 1.0 deg.