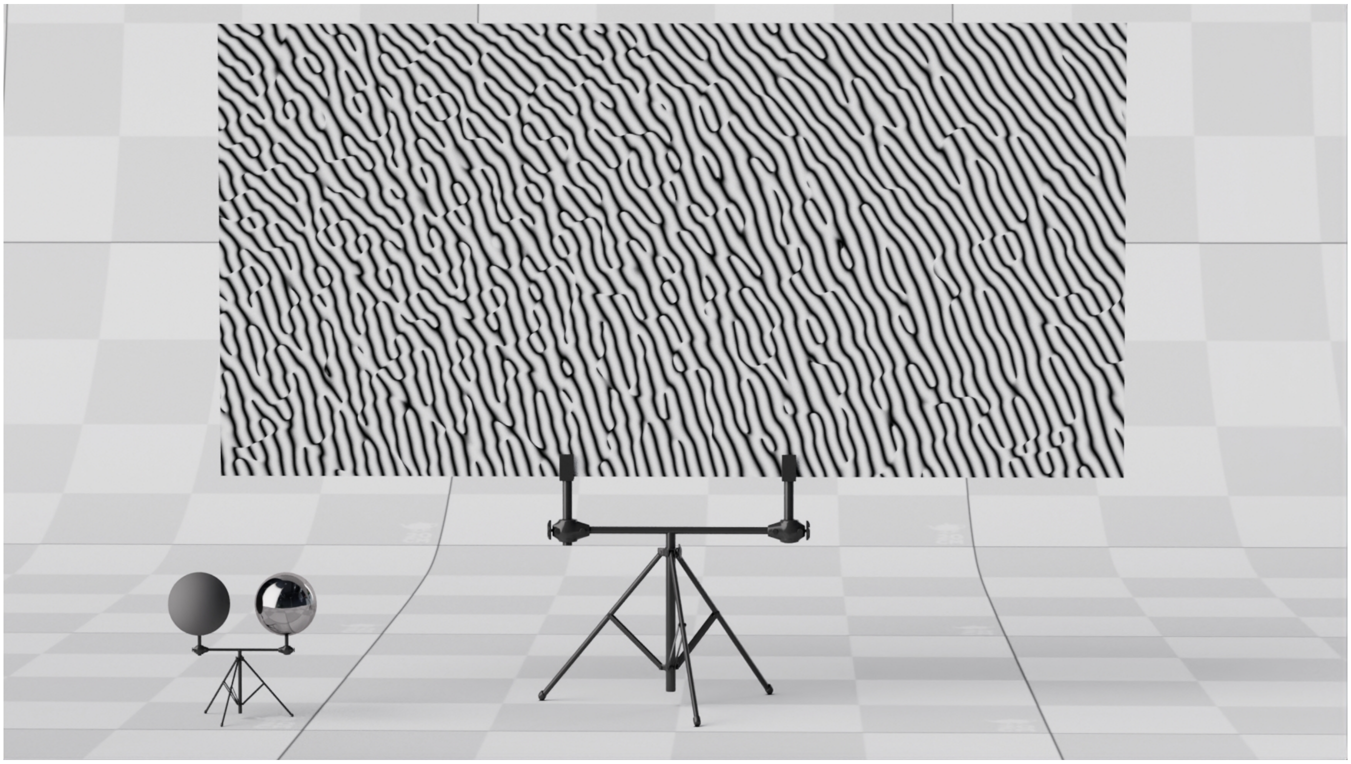
PxrPhasorNoise



Dimensions

The dimensionality of the noise determines how we sample the grid of phasor wave emitting kernels. Choose 2D Flat for ground planes or screen space effects.

inputManifold

Right-click to insert a manifold to control the PxrPhasorNoise

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Align Mode

When using the phaseAlign or directionAlign parameters the alignMode sets how the phasor alignment is oriented. For example, Cylindrical Z will create rings around the Z axis.

Frequency

The main frequency of the phasor waves. This input is connectable.

Frequency Flatten

Flatten the frequency against the surface normal. In 3D mode it's likely that the phasor wave orientation will sometimes cut across the surface obliquely, leading to a lower perceived noise frequency. This slider tries to compensate by increasing frequency as the noise direction aligns with the surface normal.

Shaping

Shaping Mode

Shaping Mode picks which profile we apply to the phasor result. Sine and cosine make smooth periodic waves. Pulse and pulse centered make solid step functions of the input width at the end of the center of the period, respectively. The Gabor modes represent the Gabor version of the noise with much less contrast in areas of wave interference. Spline mode lets you use a spline to control the shaping.

Shaping Soften

"Use this control to try to soften the sharp pointy areas where there is a lot of phasor wave interference. Increasing the softening will mix in the analytical average of the chosen shaping mode.

Direction

Direction

Set the initial direction of the phasor waves. This input is connectable. If the direction changes quickly over the size of a phasor wave kernel, it can introduce warping artifacts. Try varying the direction more slowly or reducing the space between kernels.

Direction Align

Align the direction of the phasor waves in the manner set by alignMode. Use this to create linear, cylindrical, or spherical patterns in the phasor wave noise.

Direction Jitter

Jitters the direction of the phasor waves. This jitter is built-in so we can evaluate the noise at the phasor wave kernel and impulse centers, preventing any warping artifacts.

Direction Jitter Frequency

The frequency of the directionJitter noise.

Direction Jitter Scale

The scale in XYZ of the directionJitter noise.

Direction Rotate

Use this to rotate the phasor noise direction around the surface normal. The direction of the phasor noise is counterintuitive, it defines the direction of the wave motion, which is orthogonal to the top of the wave crest. This control lets you swing the direction around the normal at any angle.

Direction Flatten

Flatten the direction against the surface normal. In 3D mode it's likely that the phasor wave orientation will sometimes cut across the surface obliquely, leading to a lower perceived noise frequency. This slider tries to compensate by pushing the direction towards the tangents.

Phase Offset

Offset the phase of the phasor waves. Plug in a time value to animate a flow effect.

Phase Align

Align the phase of the phasor waves in the manner set by alignMode. Use this to try to decrease the amount of perturbation in the noise result. If the wave direction is also varying or very different from the alignMode, aligning the phase may not help.

Kernel

Kernel Frequency

The base frequency of the phasor wave kernel positions.

Kernel Scale

The scale in XYZ of the phasor wave kernel positions.

Kernel Neighbors

How many near kernel neighbors to sample for phasor waves to convolve. In 2D, you access (2n+1)^2 neighboring kernels. In 3D, you access (2n+1)^3 neighboring kernels. With the default of 2, that is 25 kernels for 2D and 125 kernels for 3D! More kernels are more expensive but give potentially smoother results.

Kernel Impulses

How many impulses to sample per phasor wave kernel. They are randomly scattered within each phasor wave kernel grid cell, but given a uniform distribution of phase offsets. More impulses are more expensive.

Kernel Falloff

Each phasor wave kernel has a cosine shaped falloff from its center. This control is a power function on the falloff, decreasing will flatten the area of influence, increasing will sharpen the area of influence.

Kernel Error

Set how much error and discontinuity is allowable in sampling the kernels. At zero we use a cosine falloff to make sure there are no discontinuities, but it's possible with low kernel neighbors and a stretched kernel scale to find areas filled with grey. Increasing above zero switches to a Gaussian falloff to fill in those areas, but can also introduce discontinuities along the kernel cell grid.

Octaves

Phasor Octaves

Increasing phasor octaves adds phasor wave impulses at different frequencies. Use this control to add texture to the noise result without affecting contrast.

Phasor Octave Scale

The frequency scale of each successive phasor octave.

Phasor Octave Weight

The weight of each successive phasor octave.

Phasor Octave Offset

The phase offset of each successive phasor octave.

Phasor Octave Rotate

The rotation around the surface normal for each successive phasor octave.

Fractal Harmonic Mode

The combination mode of each fractal and harmonic octave. These octaves are combined in amplitude space after the phasor result has been evaluated.

Fractal Octaves

Increasing fractal octaves computes phasor results at different frequencies which are then combined in amplitude space. These octaves will most likely not be aligned with each other.

Fractal Octave Scale

The frequency scale of each successive fractal octave.

Fractal Octave Weight

The weight of each successive fractal octave.

Fractal Octave Offset

The phase offset of each successive fractal octave.

Fractal Octave Rotate

The rotation around the surface normal for each successive fractal octave.

Harmonic Octaves

Increasing harmonic octaves computes phasor results at exact 2x, 4x, etc. frequency which is then combined in amplitude space. These octaves will be aligned with each other.

Harmonic Octave Weight

The weight of each successive harmonic octave.

Harmonic Octave Offset

The phase offset of each successive harmonic octave.

Advanced

Filter Scale

The filtering in this noise is based on the final frequency and direction of each phasor wave impulse and is computed and applied to each of the fractal and harmonic octaves. We can't skip entering the kernel loop to save computation time, but the filtering helps a lot with convergence. Decrease the filterScale to recover detail at the cost of more iterations.

Adjust Output

Color Min

Color Max

Float Min

Float Max