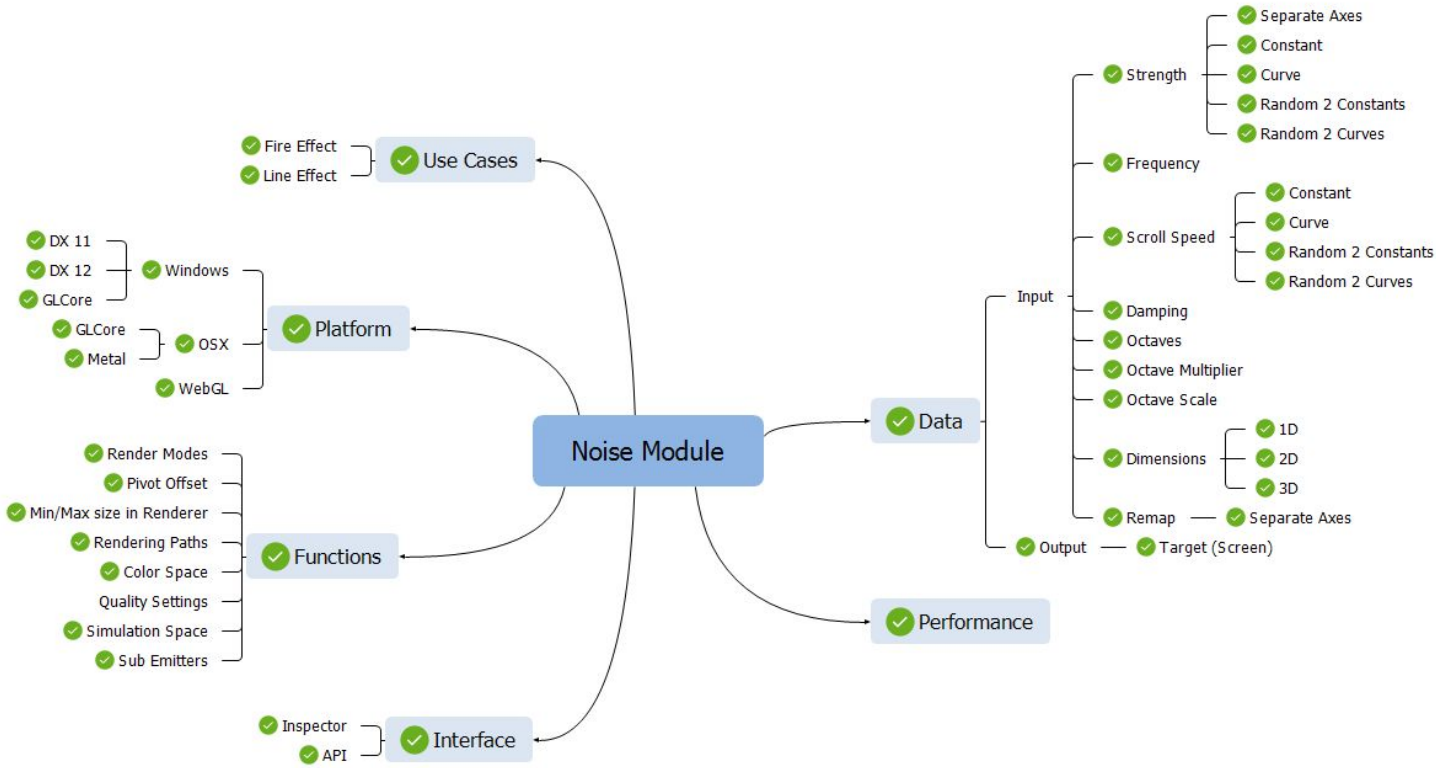
# [Shuriken] Noise (20/06/16)

**Outline:** *New module for adding noise to particle movement.* **(Completed)**

# Overview

**Version 5.5.0a2** (bbe1404323cb))
*Fri, 17 Jun 2016 11:23:10 GMT Branch: core/particle-noise*

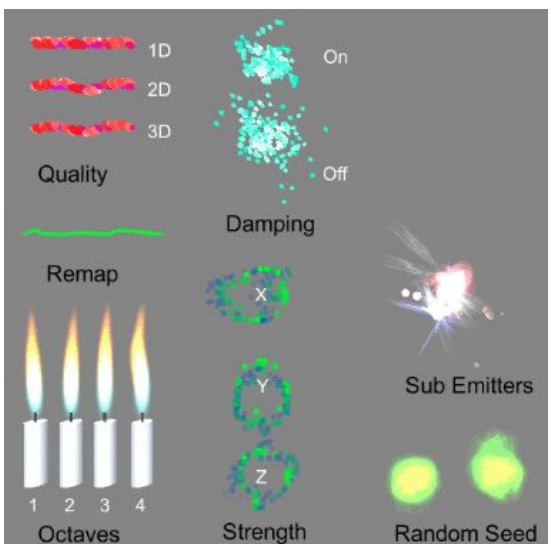



## Bugs

| Bug ID | Bug Status | Bug Title |
|---|---|---|
| **000000** | Not reported | **(Minor)** Preview does not update on undo. |
| **000000** | Not reported | **(Minor)** Resetting the particle system does not reset the scroll speed curve. |

## Conclusion

Very useful module and a much needed addition to Shuriken.

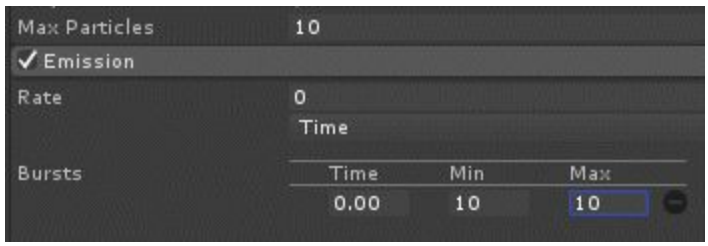


# Tests

## Misc (non-feature specific)

Undo does not affect **Max** burst setting when it has been set to match a higher **Min** value.

- **Minor, postponed**

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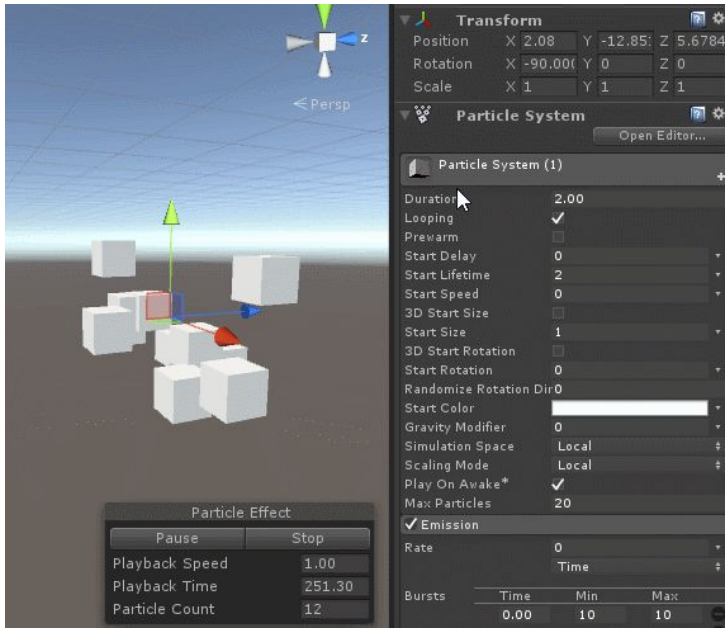
~~**Bug:**~~
A couple of particles go missing when emitting looping bursts.
**Min/Max:** 10
**Max Particles:** 20
**Duration/Lifetime:** 2

Expected to spawn 10 particles every 2 seconds, but the second iteration only spawns 8.

- **Fixed (it was an issue present in trunk, fixed by merging latest round of bug-fixes)**

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Probably unrelated, but periodically getting the following in editor mode:
Assertion failed on expression: 'depthSurface == NULL || rcolorZero->backBuffer == depthSurface->backBuffer'

- **Trunk issue, unrelated to this feature.**

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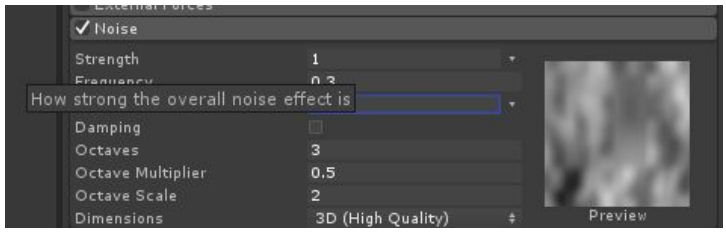
~~**Bug:**~~
Full stops in the tooltips missing :)

- **Fixed**

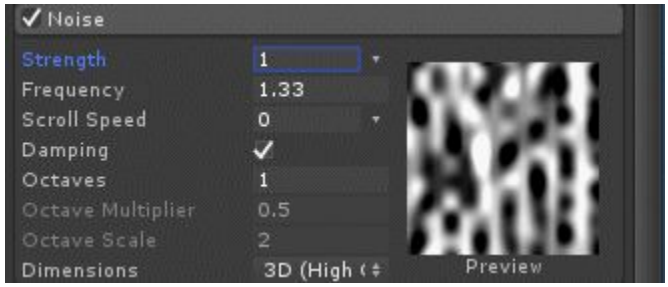



## Properties

### Strength

~~**Bug:**~~
Expected **Strength** to visually reduce the contrast in the preview.
Currently this happens only with extremely low values, making strength changes effectively not previewable.

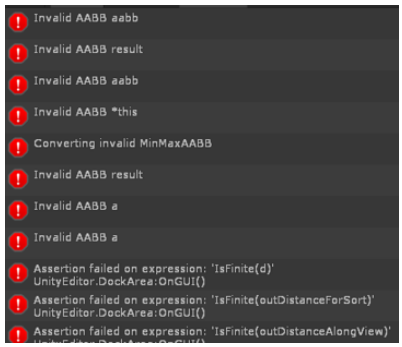
- **Fixed**



## Frequency

~~**Bug:**~~
AABB error when modifying frequency via script.

- **Fixed**

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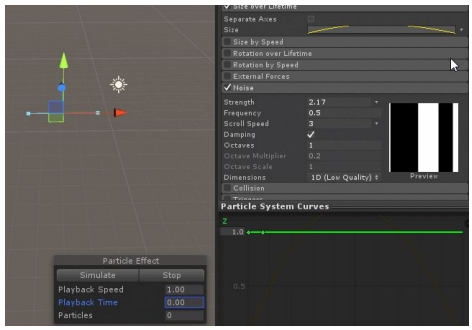
~~**Bug:**~~
Frequency independent of playback time, making the particle system look different at the same playback time.

- **Fixed**

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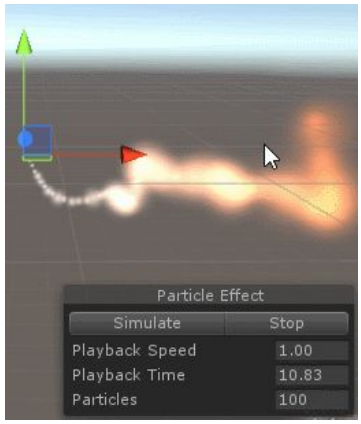
~~**Bug:**~~
Related; scrubbing the timeline does not affect the noise scroll, making a system that naturally got to a certain playback time and one that was forwarded there manually show different results.

- **Minor, Postponed**




## Scroll Speed

~~**Bug:**~~
Setting large value on scroll speed breaks the system and throws AABB errors. Preview is permanently not animating on that particle system after that (even after switching scenes or restarting Unity).

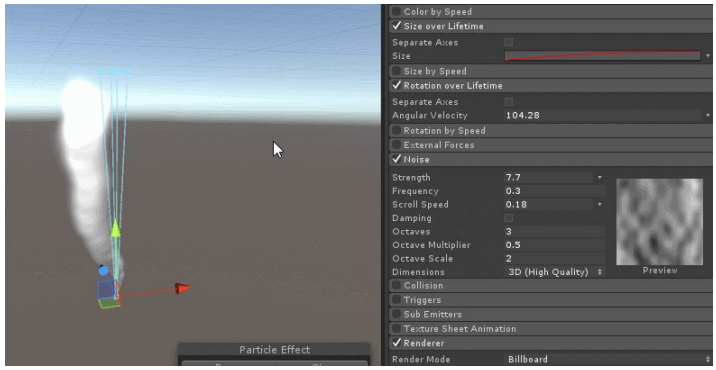
- **Fixed**


**Bug:**
Resetting the particle system does not reset the scroll speed curve.

## Damping

I might be misunderstanding this, but I expected damping to reduce the strength, but enabling it looks to be increasing it.

- **Resolved**



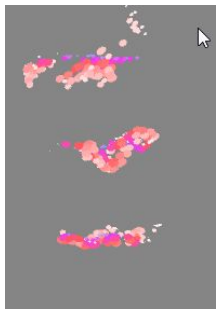
## Octaves

**Works as expected.**

## Quality

**Works as expected.**

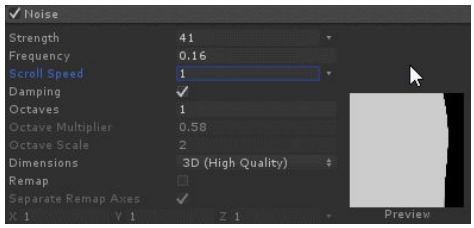
I understand that we are talking about the dimensions of the noise, but wonder if "**dimensions**" might not make users think of the X,Y,Z of their particle system.



## Remap

Separate Remap Axes allows for setting of constants, which flattens the noise. Bug?

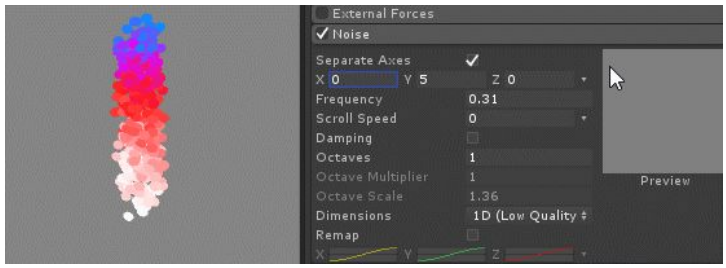
- **Fixed**




## Separate Axes (strength)

Now that we have separate axes, does **negative strength** make sense? In this example, I'd like to mirror the effect I'm getting at 15 X to -15 X.

- **Implemented**

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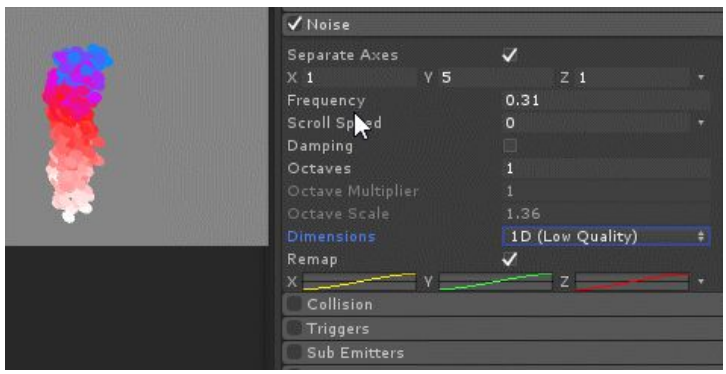
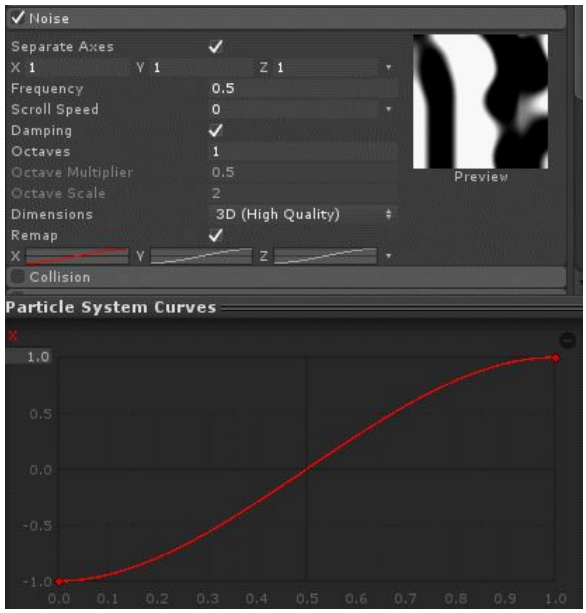
Just want to confirm this is expected as I'm having a bit of a hard time visualizing 2D/3D noise :) I literally cannot make a long offset on one axis with any quality setting except for 1D. I assume there's a mathematical reason for it, but you know, I went to art school, so just checking :)

- **By design** *(remapping the axis in question gives desired result).*




## Separate Axes (remap curve)

~~**Bug:**~~
Can't modify the curve magnitude.
- **Fixed**




## Shuriken Integration

### Sub emitters

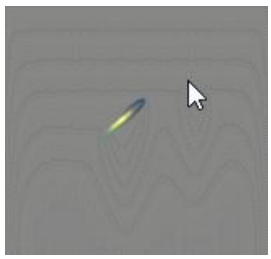
**Works as expected.**

### Renderer

Render Modes: **Works as expected.**
Pivot Offset: **Works as expected.**
Min/Max Size: **Works as expected.**
Simulation Space: **Works as expected.**

### Feature request

Axis-constraint for noise (i.e. noise affects only specific axes).
- *Bonus points: Positive/negative constraints on each axis.*
- **Implemented**



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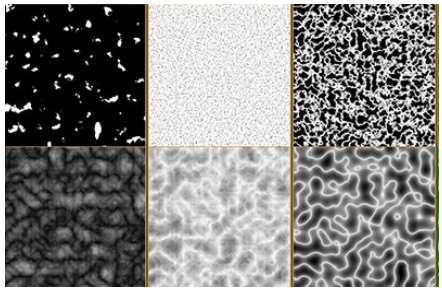
Falloff curve: useful for creating different types of noise by clamping low/high values.

- **Implemented**



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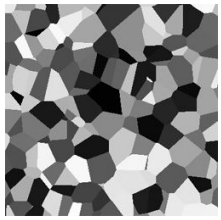
Are there other types of noise (i.e. voronoi) that can be easily implemented? Would they add more variety?

- **Postponed**



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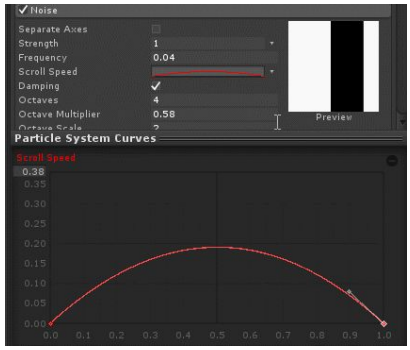
Can scroll speed be set to negative value? The idea being that you can ping-pong between an effect

- **Implemented**

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Have the particle random seed apply an offset to the noise?

- **Implemented**

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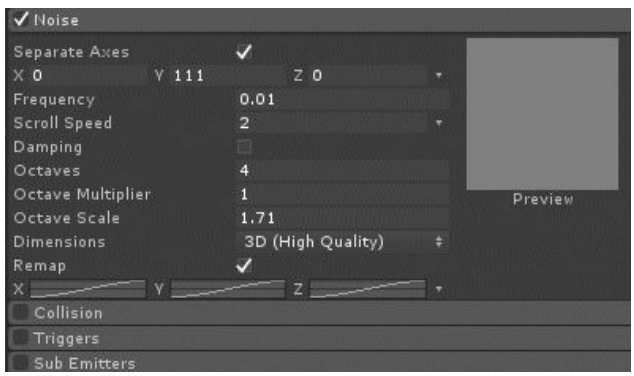
Implement a preview for Y and Z (currently, only X is shown).
Possible approaches when separate axes is enabled:

- Change the preview text to an Enum for Preview X, Y, and Z.
- Map XYZ to RGB
- **Implemented**
- **Small issue; preview does not update on undo.**

## API

~~**Bug:**~~
Setting remap via script to a constant value changes the remap curve to constant.

i.e. :
*var noise = ps.noise;*
*noise.remapX = 22;*

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Setting dimensions to a higher value than range (in conjunction with above) **crashes** Unity:

```
========== OUTPUTING STACK TRACE ==================

0x00007FFB8B534C83 (mono) mono_set_defaults
0x00007FFB8B4884F9 (mono) mono_runtime_invoke
0x00000001403D880F (Unity) [c:\buildslave\unity\build\runtime\scripting\backend\mono\scriptingbackendapi_mono.cpp:501] scripting_method_invoke
0x00000001405ADE80 (Unity) [c:\buildslave\unity\build\runtime\scripting\backend\scriptinginvocation.cpp:271] ScriptingInvocation::Invoke
```

- **Fixed**

## Render Paths / Color Space

**Works as expected.**

## Platform Tests

**Win** (editor and standalone): **Works as expected.**
**WebGL**: **Works as expected.**
**OS X** (editor and standalone): **Works as expected.**