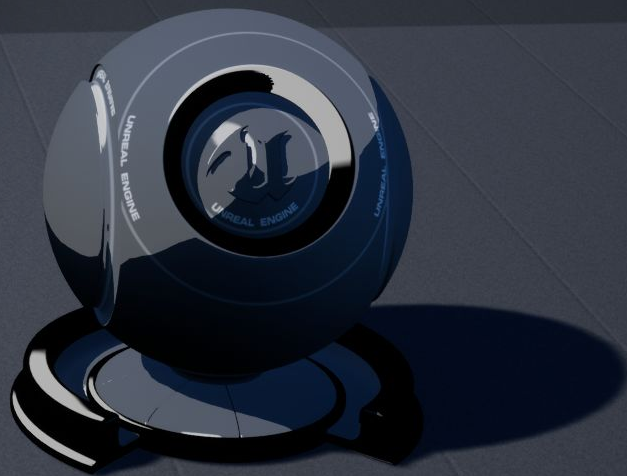




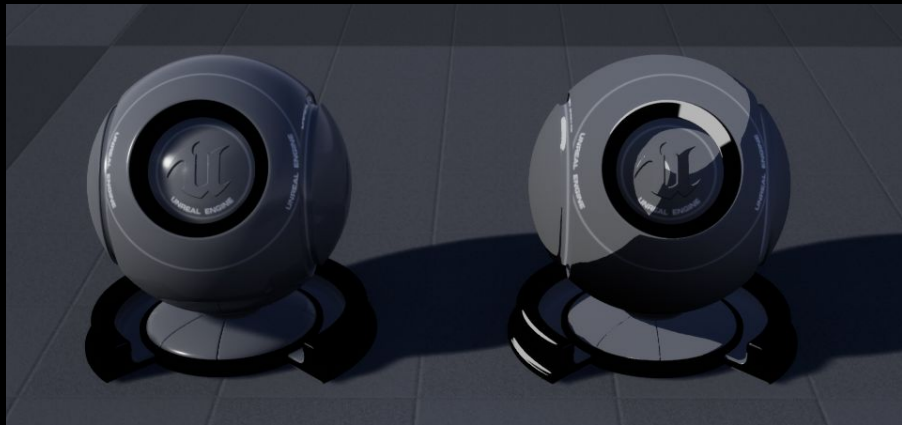
# UE4 Niagara与材质 在二次元的新展开

Asher Zhu  
Tech Artist, Epic Games China

# 浅谈Cell Shading



# Toon Shading



Physically Based  
Rendering

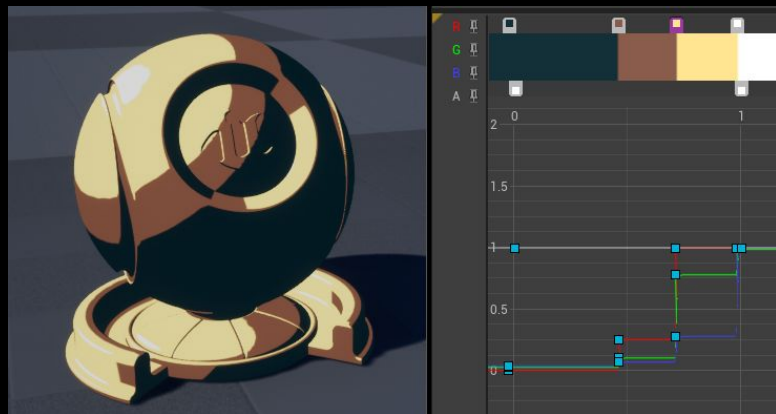
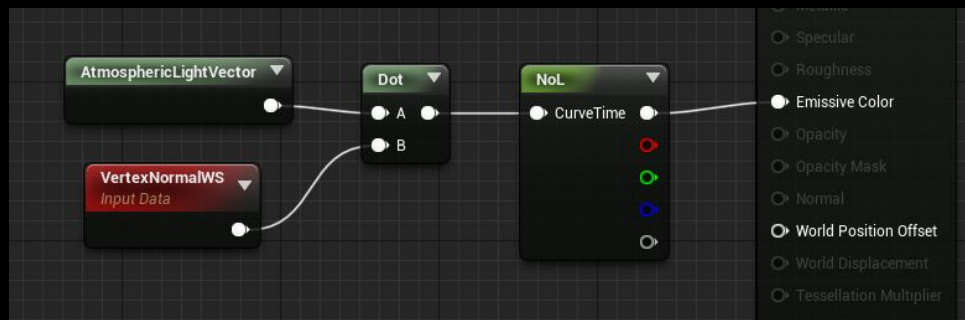


Non-photorealistic  
rendering



# Easy mode

## 普通材料制作



除了AtmosphericLight节点拿不到其他光源信息  
无法接受影子

# Advanced Mode

# 高级材料制作

“Toon Shading Models, Stylized Rendering Experiments”  
by doomfest

doomfest  
Patron

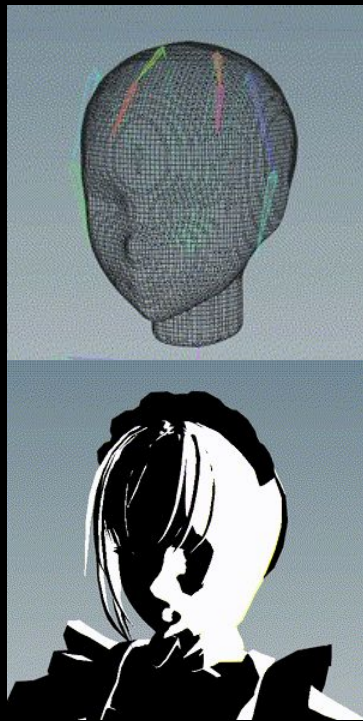
Join Date: Jul 2015  
Posts: 28

Toon Shading Models, Stylized Rendering Experiments  
10-08-2018, 04:54 PM



Github fork link: <https://github.com/SaimonMa/UnrealEngine>  
Example Project: <https://drive.google.com/open?id=1fv...DYWZXLN4pHneS2>

# Normal Adjustment



# 阴影的偏移

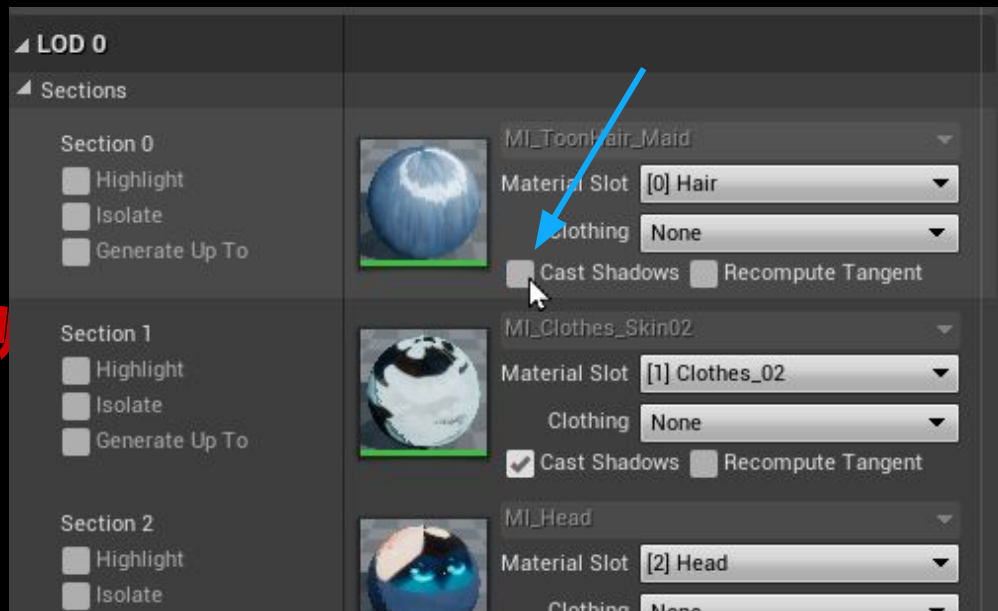




# Disable Shadow



呵 真是可爱呀

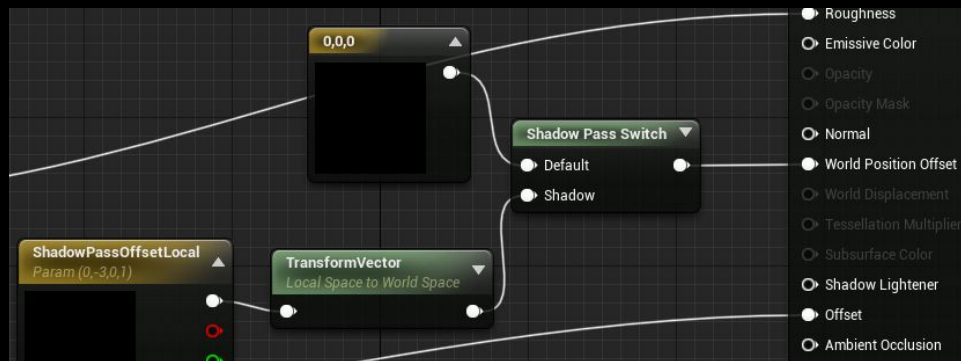


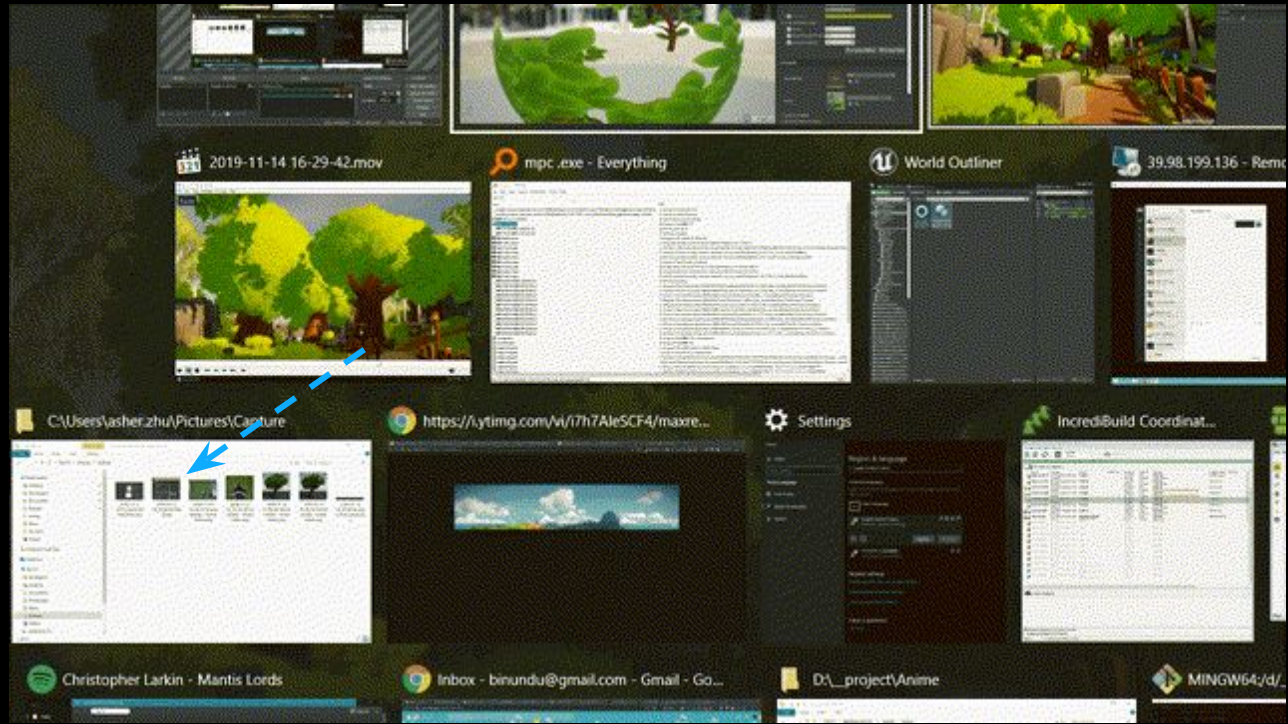


# Disable Shadow

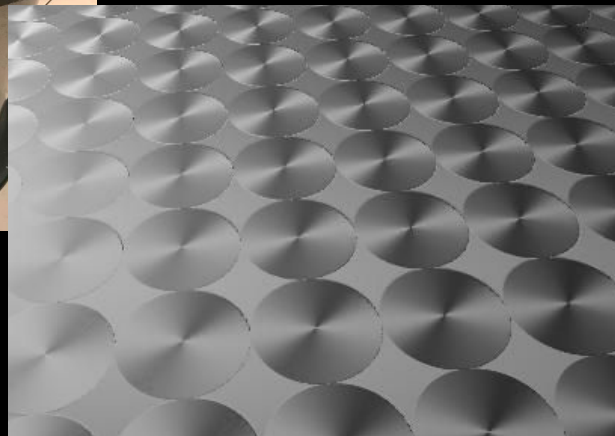
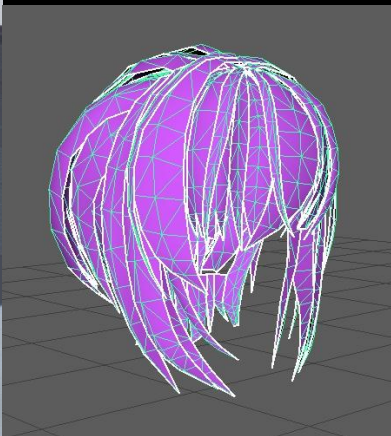


# Shadow Pass Switch



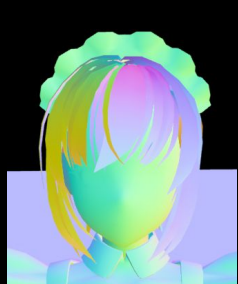
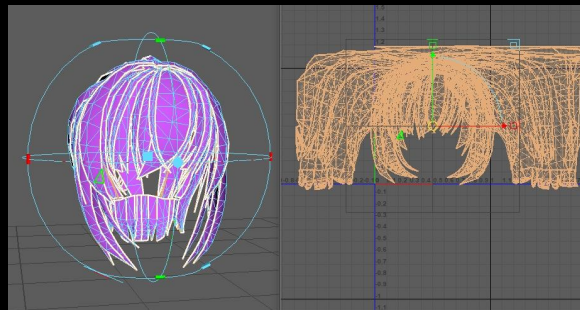
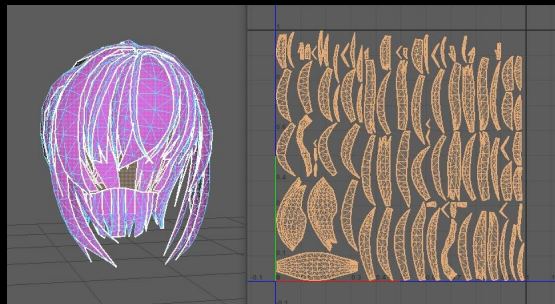


# 头发



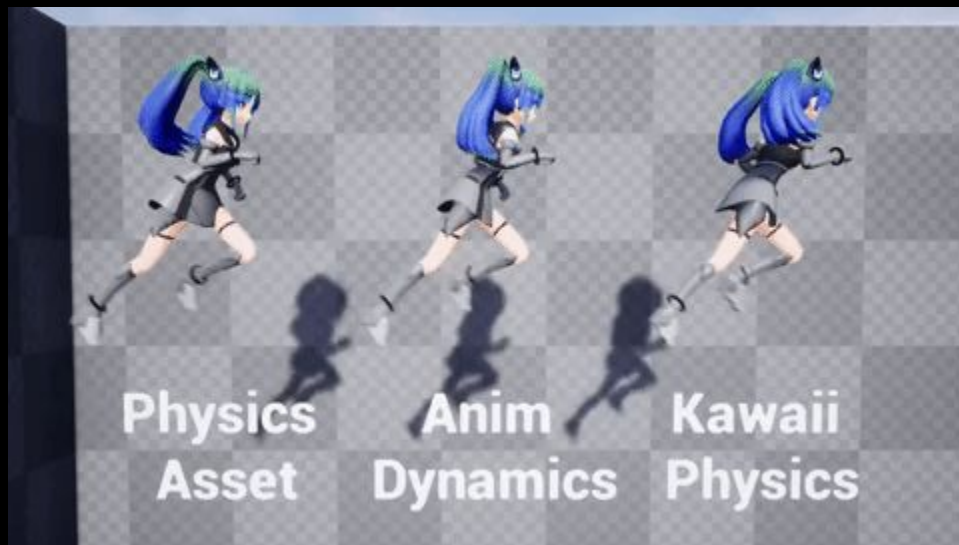


# Hair Flow



# Kawaii physics

By KaZ Okada @ Epic Games Japan







# @虚幻引擎官方



# 扫地模拟器

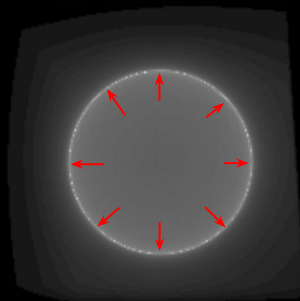
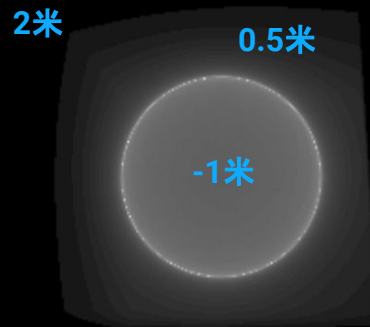
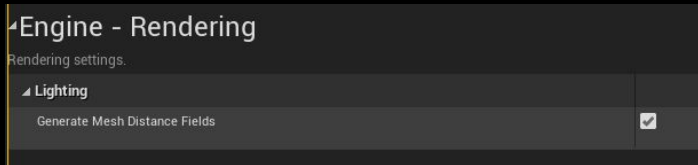
Distance Field驱动GPU粒子物理



# Distance Field 距离场

距离最近的表面多远

作为3D Texture存储





# Distance Field Ambient Occlusion



# Distance Field 距离场

距离最近的表面多远

3D Texture

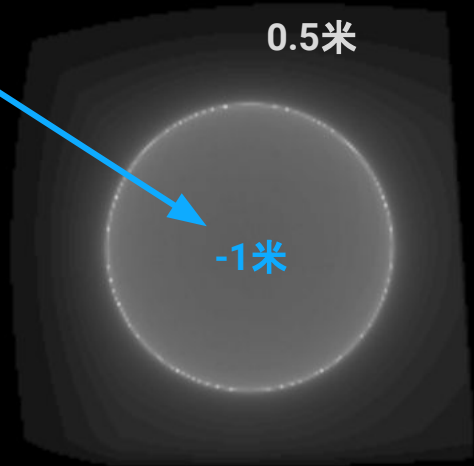
可用于GPU粒子快速检测碰撞



3米

0.5米

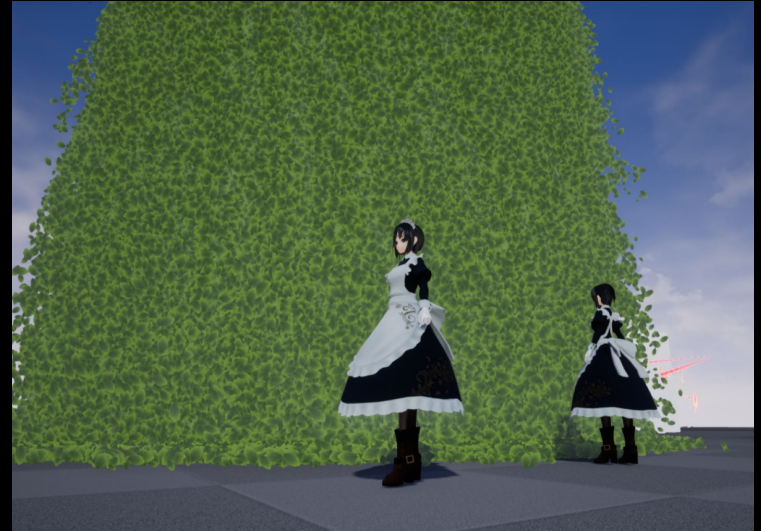
-1米



(つ °Д °;)つ



Show off performance



# Normal Trick





# Specular 假扮 SSS



Roughness = 0.95  
Specular = 0

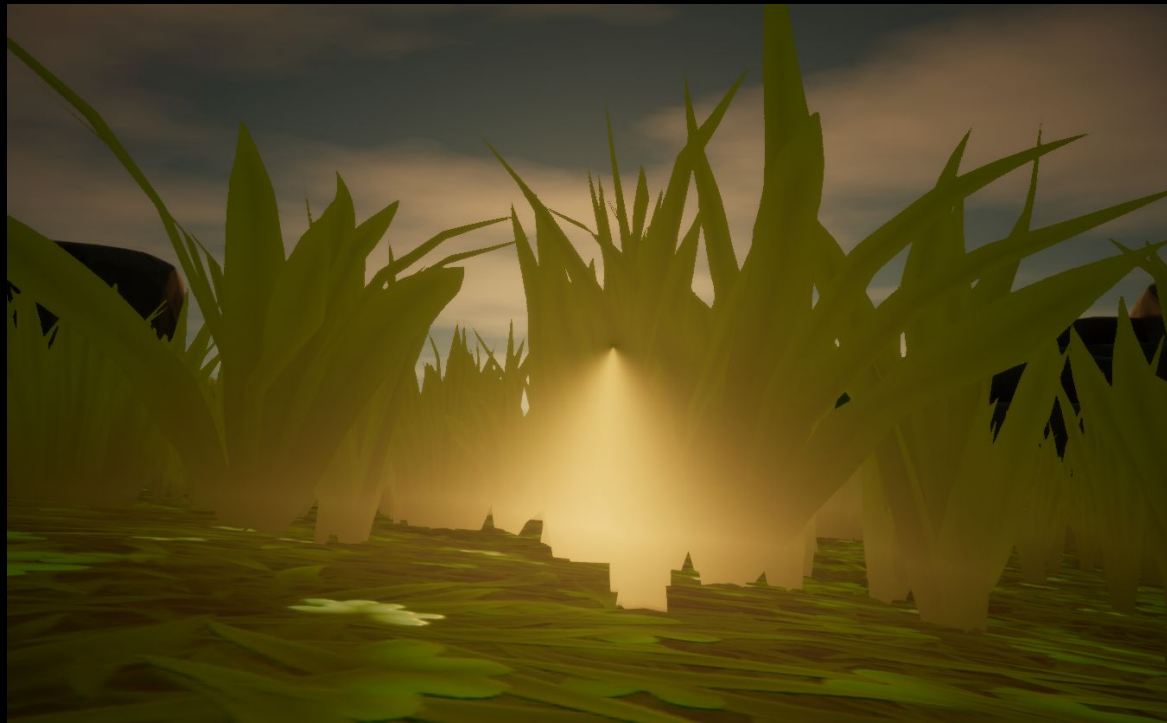


Roughness = 0.95  
Specular = 0.5



Roughness = 0.77  
Specular = 0.5

# A Minor Surprise



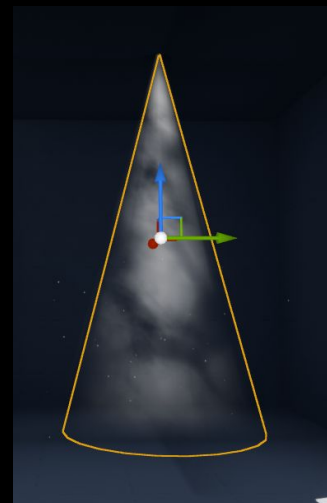
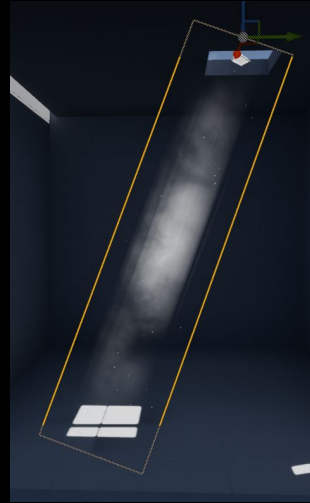
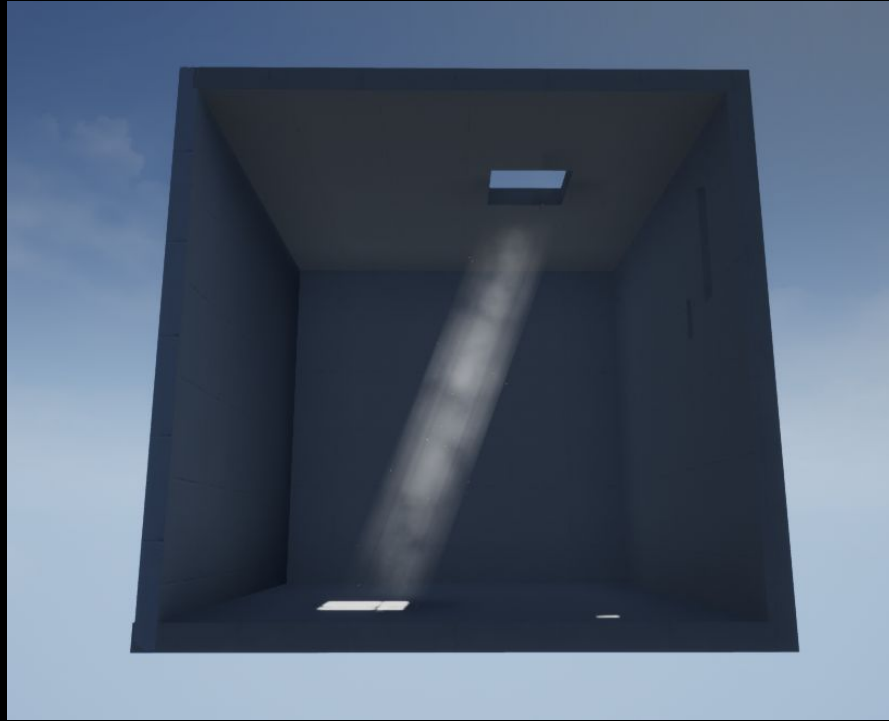
# Ribbon伪烟雾



# AutoRay

高度定制化的伪God Ray  
解决方案

# Card Fog





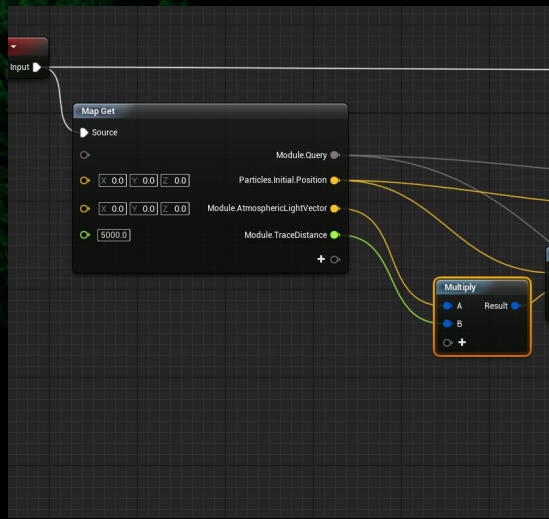
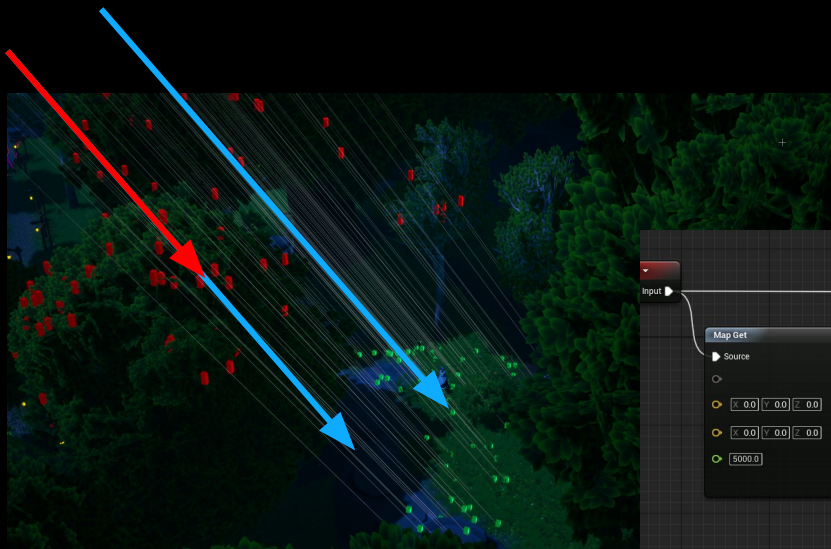
# Volumetric Fog vs Card Fog

Volumetric Fog



Card Fog





**Perform Collision Query Sync CPU**

- CollisionQuery
- TraceStartWorld
- TraceEndWorld
- TraceChannel: BeamGroundLevel
- CollisionValid
- IsTraceInsideMesh
- CollisionPosWorld
- CollisionNormal
- CollisionMaterialFriction
- CollisionMaterialRestitution

**Perform Collision Query Sync CPU001**

- CollisionQuery
- TraceStartWorld
- TraceEndWorld
- TraceChannel: Visibility
- CollisionValid
- IsTraceInsideMesh
- CollisionPosWorld
- CollisionNormal
- CollisionMaterialFriction
- CollisionMaterialRestitution



# 下雨天

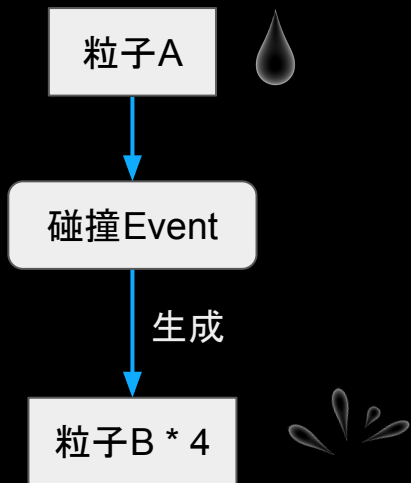


利用深度buffer碰撞

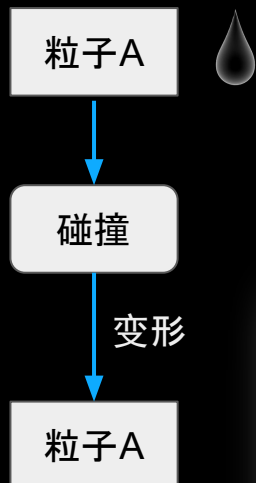


# GPU粒子装作自己有event的样子

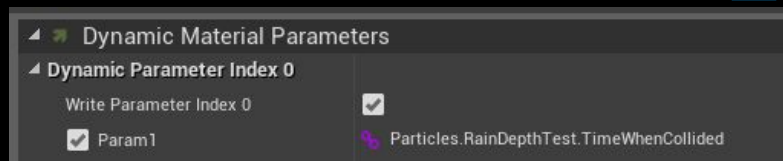
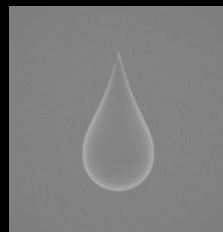
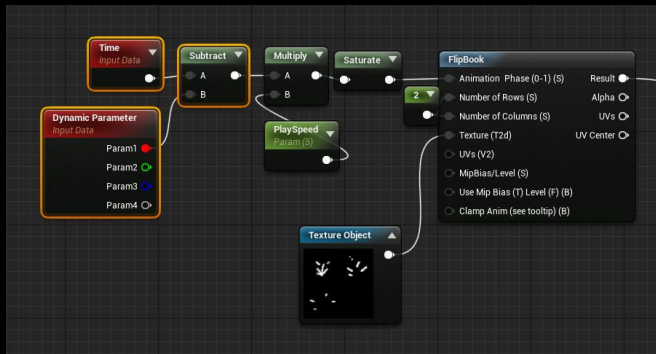
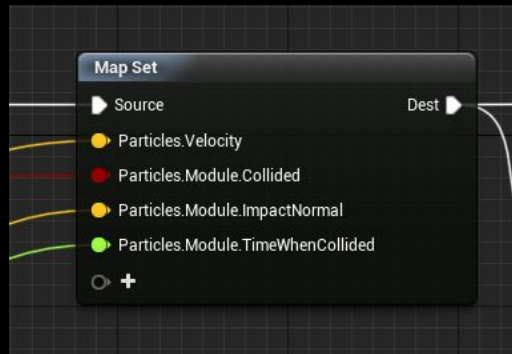
CPU Particle



GPU Particle



# Niagara到材质的传参流程





# Thank you!



<http://Asher.GG>

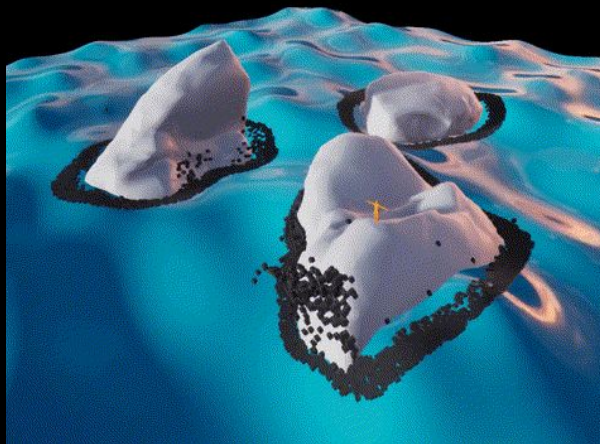
Bilibili

AshBender

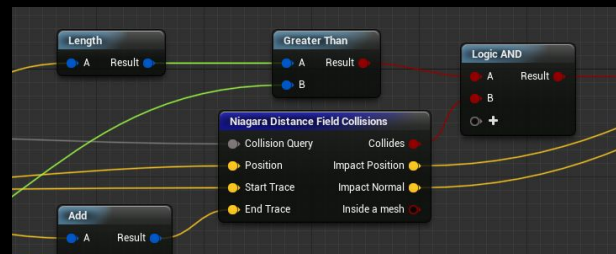
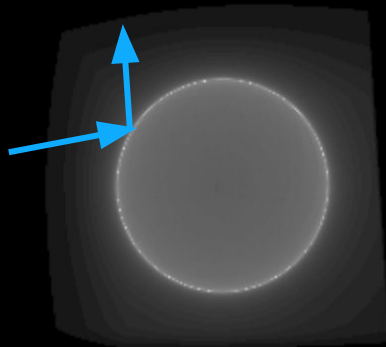
Twitter/Weibo

@Vuthric

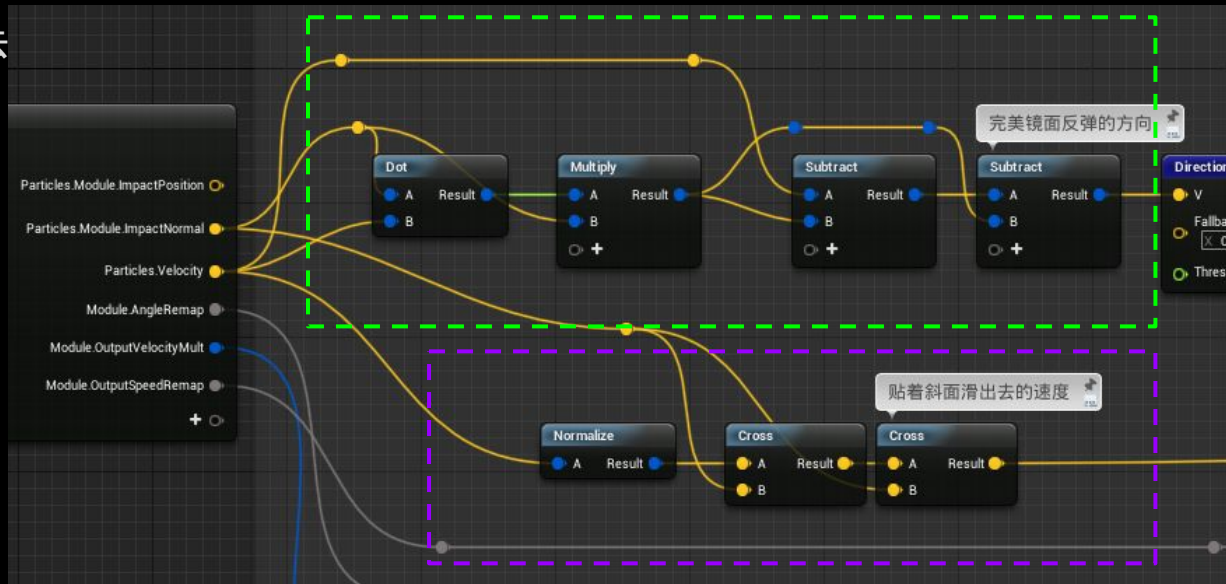
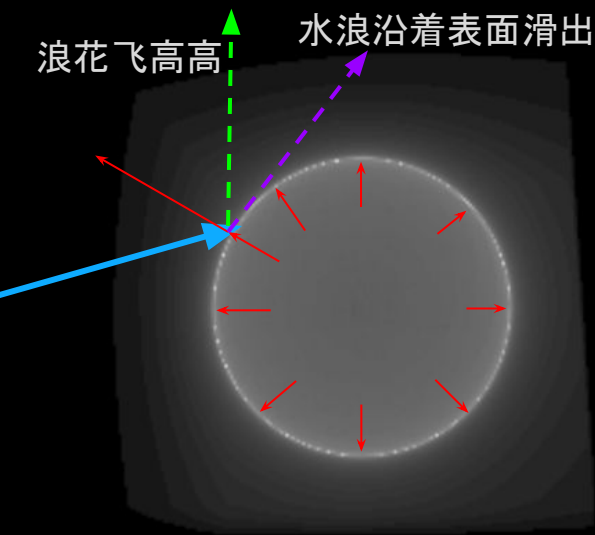
[asher.zhu@epicgamse.com](mailto:asher.zhu@epicgamse.com)



- 只在mesh附近一定距离生成
- Niagara模块检测碰撞



浪花飞高高  
水浪沿着表面滑出去

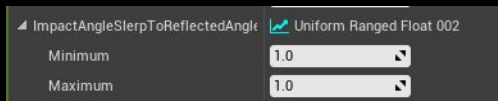




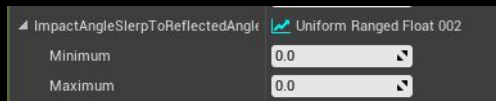
# Physics Tweak



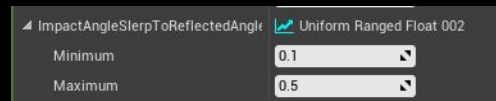
完全反射角



完全切线角



lerp(切线角, 反射角,  
rand(0.1, 0.5))





难度 ★★★

效果 ★★★★★

二次元 ★★★★★

Procedural cloud / smoke generator

**cheap** and **flexible**, Can even base off a noise texture to generate large clouds with ease

