

# Book recommendations

- *OpenGL Shading Language*, 2e. by Randi Rost  
*OpenGL Programming Guide*, 6e. by Shreiner et al.  
A tutorial-style discussion of writing shaders with GLSL
- *OpenGL Shading Language 1.2 Specification and OpenGL Specification, version 2.1*  
The ultimate references when you need precise and direct answers
- *Real-time Rendering* by Akenine-Möller and Haines  
A slightly older book, but has solid and in-depth discussions of many important topics
- *GPU Gems 1* and *GPU Gems 2*  
Collections of case studies with good solutions to particular problems. Many chapters are pretty advanced.

# Texture magnification



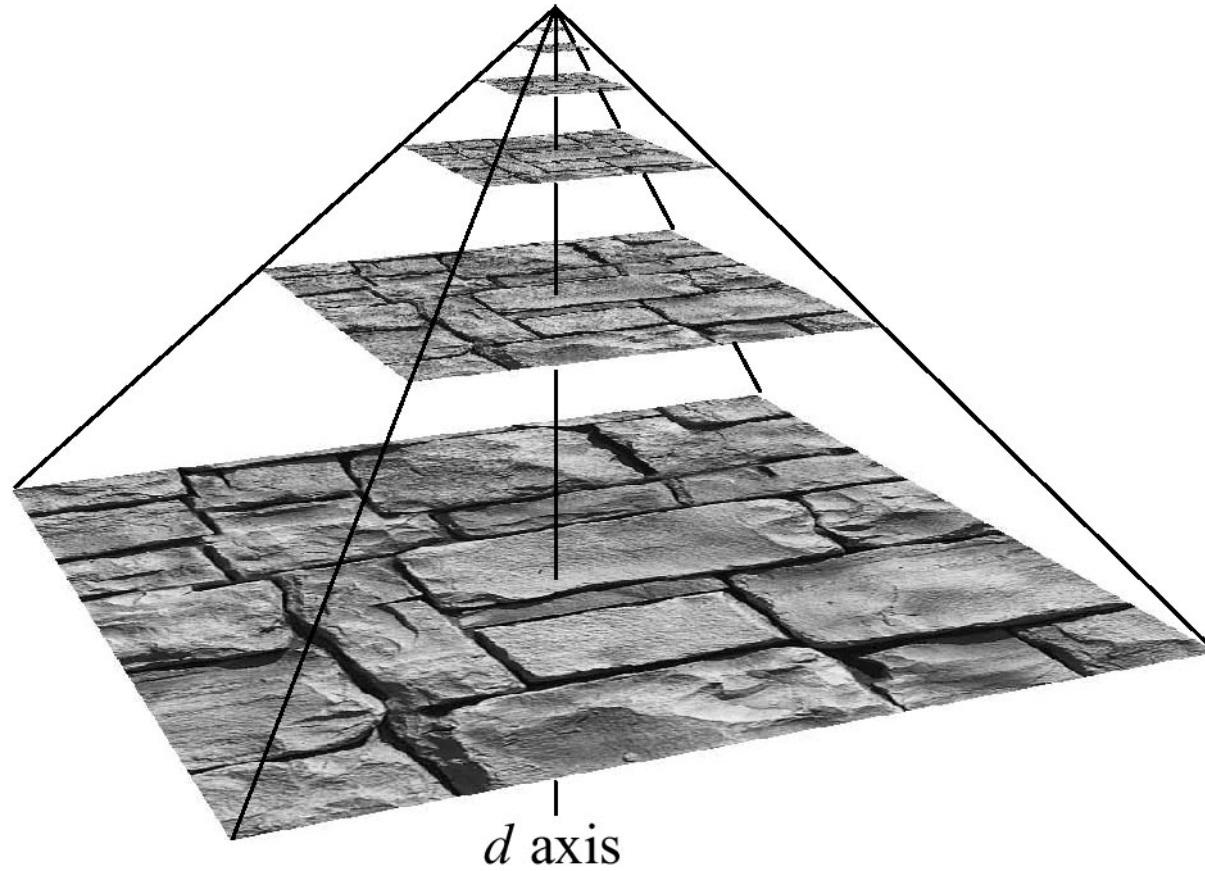
magnification by  
nearest neighbor  
sampling



magnification by  
bilinear filtering

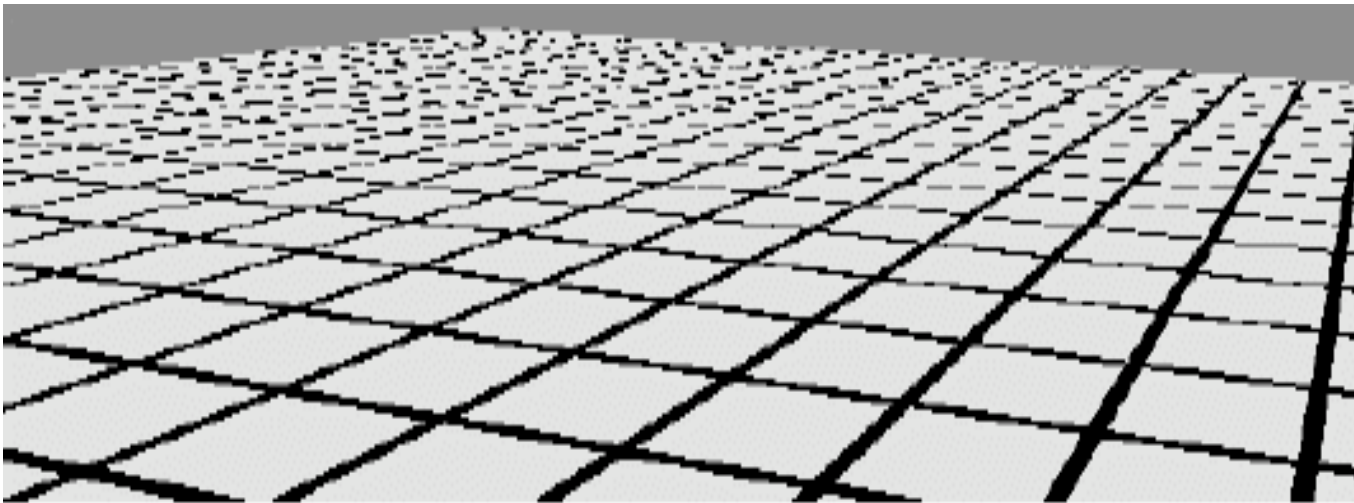
[Akenine-Möller & Haines 2002]

# Mipmap image pyramid

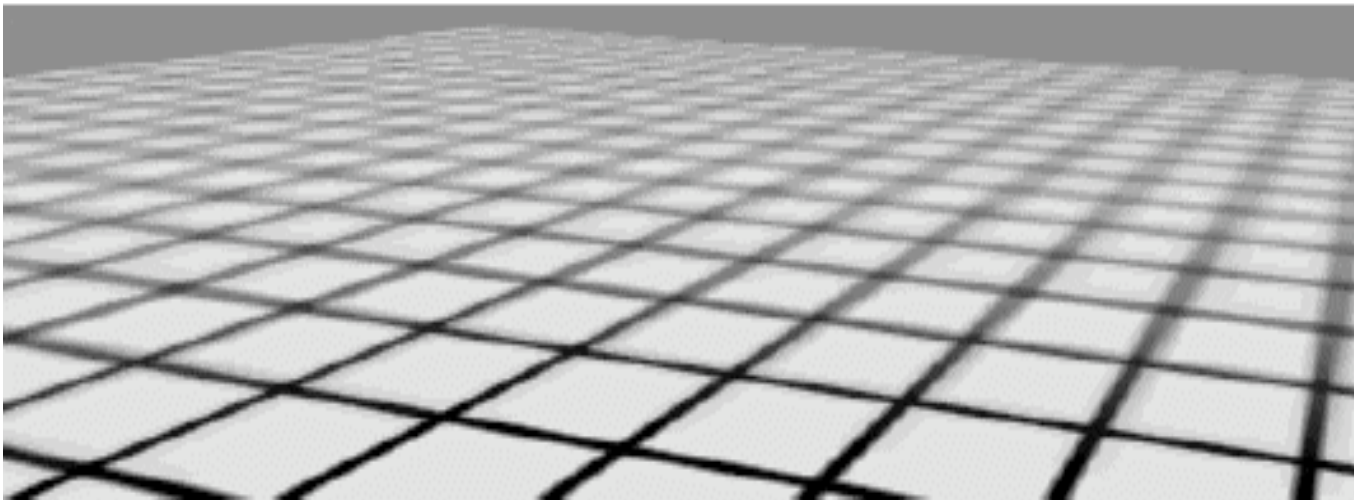


[Akenine-Möller & Haines 2002]

# Texture minification



point  
sampled  
minification



mipmap  
minification

[Akenine-Möller & Haines 2002]

bilinear, isotropic

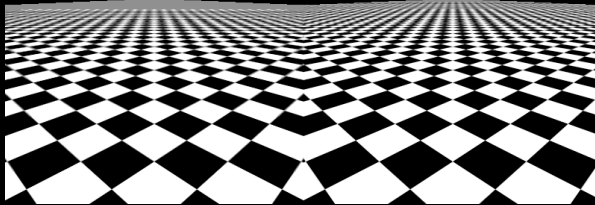
bilinear, anisotropy=2

bilinear, isotropic

bilinear, anisotropy=2

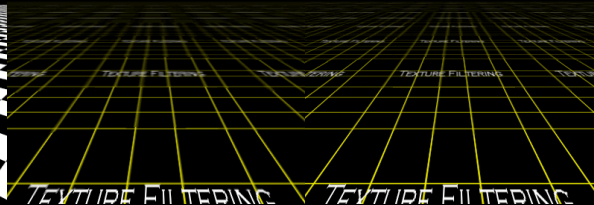
bilinear, isotropic

bilinear, anisotropy=2



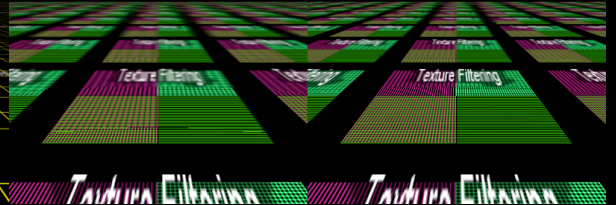
trilinear, isotropic

trilinear, anisotropy=2



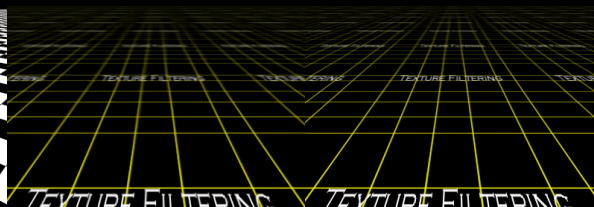
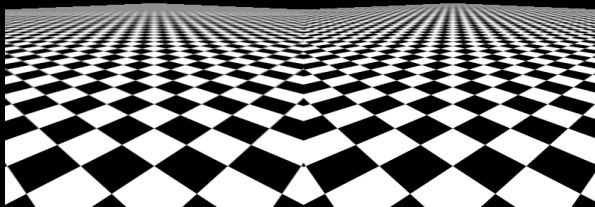
TEXTURE FILTERING  
trilinear, isotropic

TEXTURE FILTERING  
trilinear, anisotropy=2



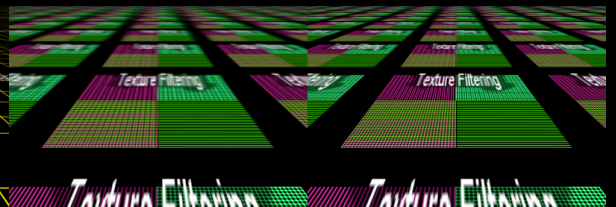
Texture Filtering  
trilinear, isotropic

Texture Filtering  
trilinear, anisotropy=2



TEXTURE FILTERING

TEXTURE FILTERING

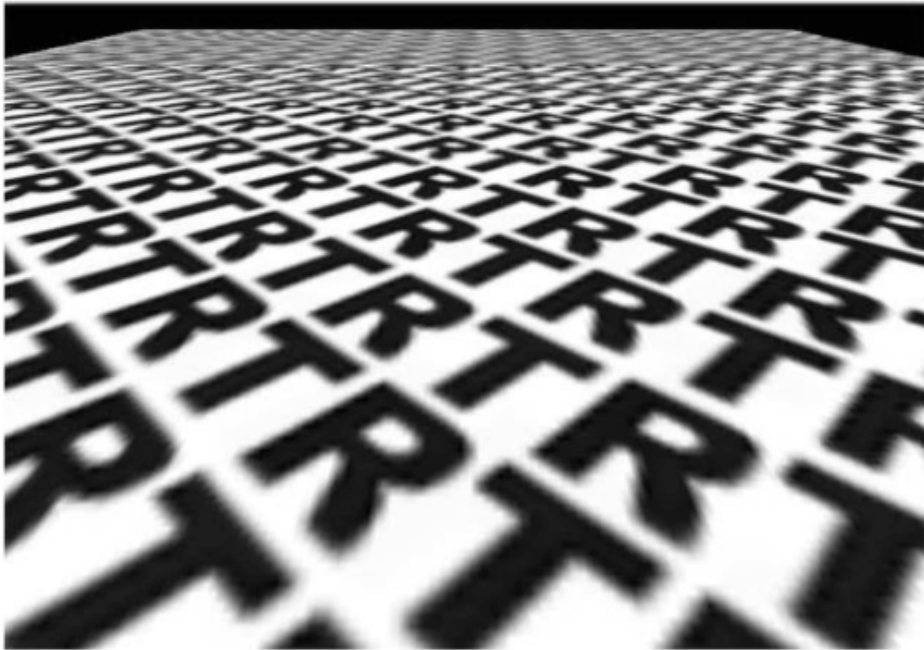


Texture Filtering

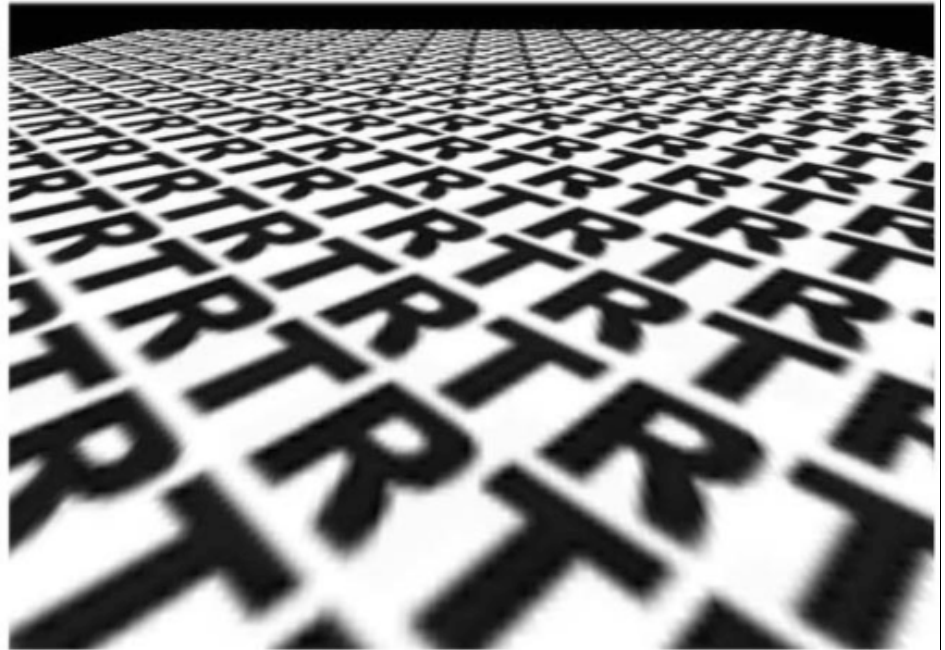
Texture Filtering

INVIDIA Corporation]

isotropic MIP map



16x anisotropic sampling



[Tomas Akenine-Möller]



isotropic MIP map



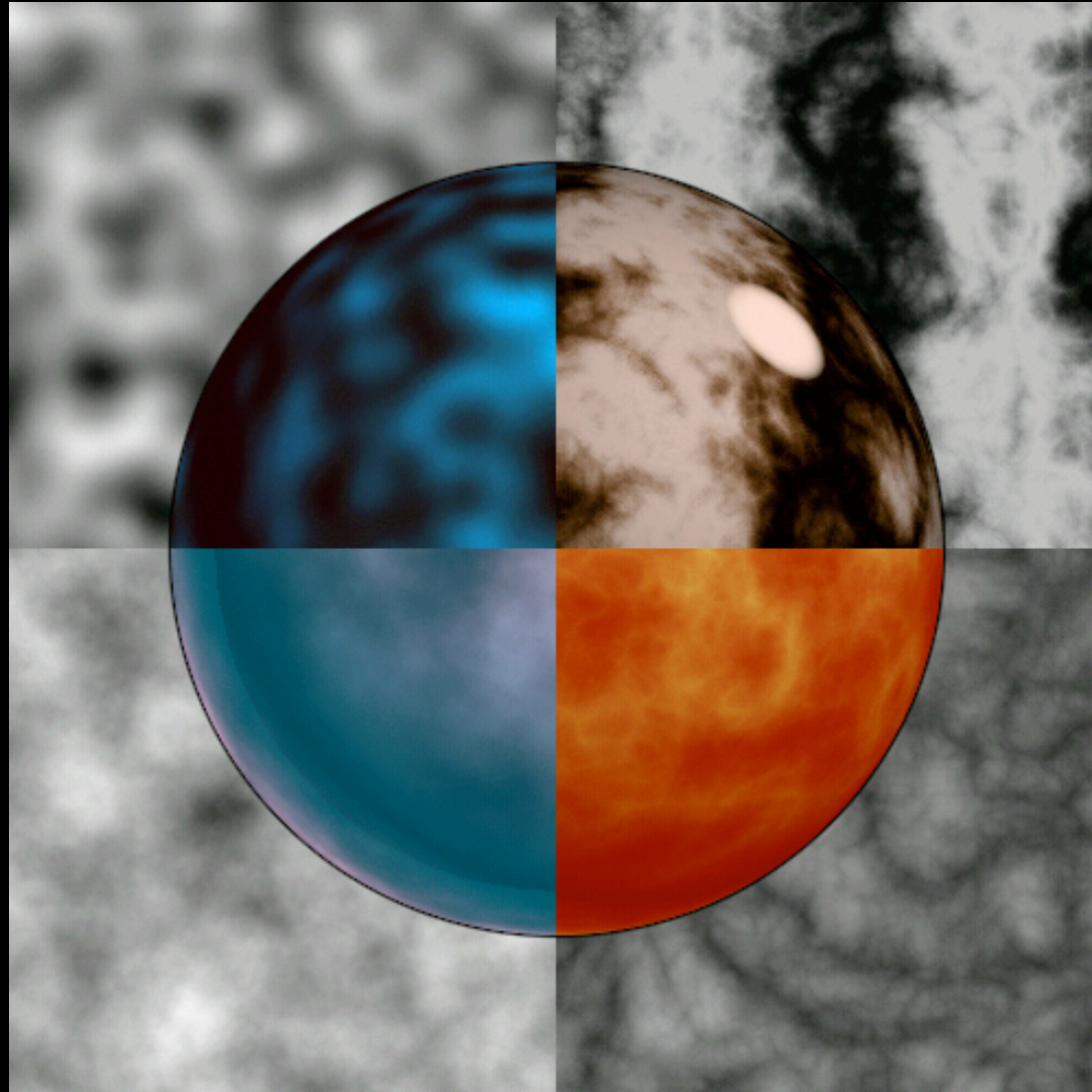
anisotropic sampling



[Angus Dorbie]

just noise

$\sin(x + \text{sum}(1/f(|\text{noise}|)))$

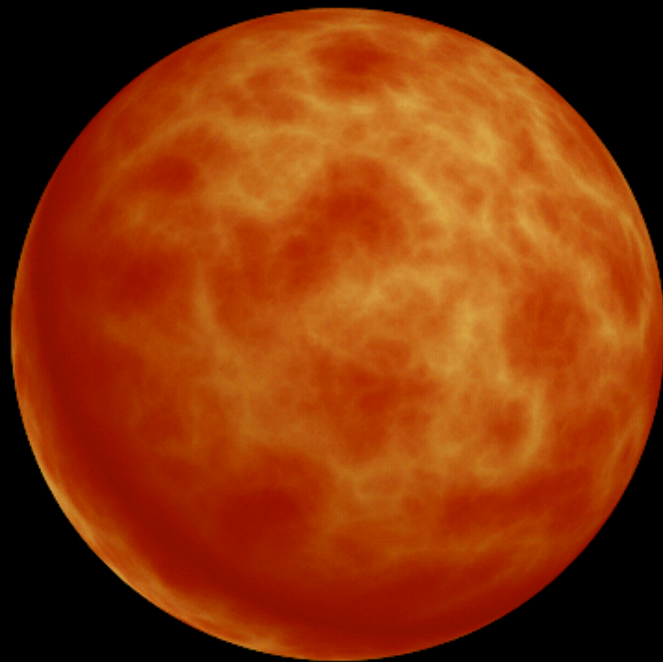
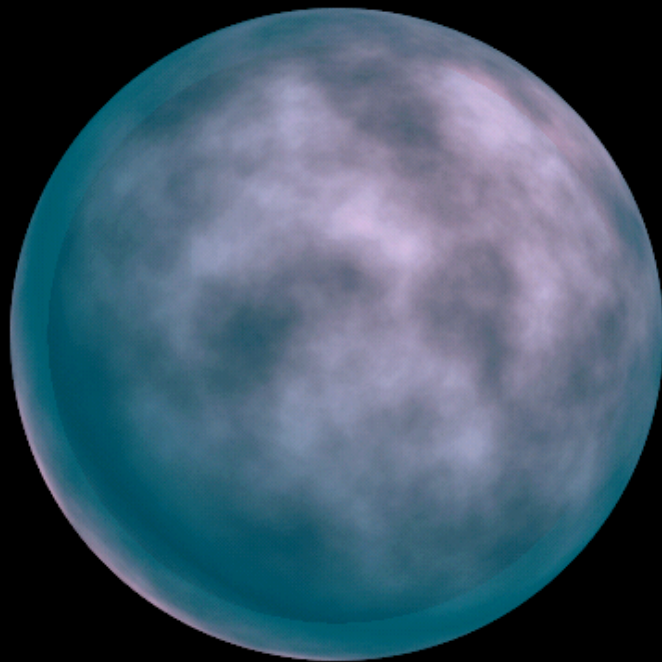
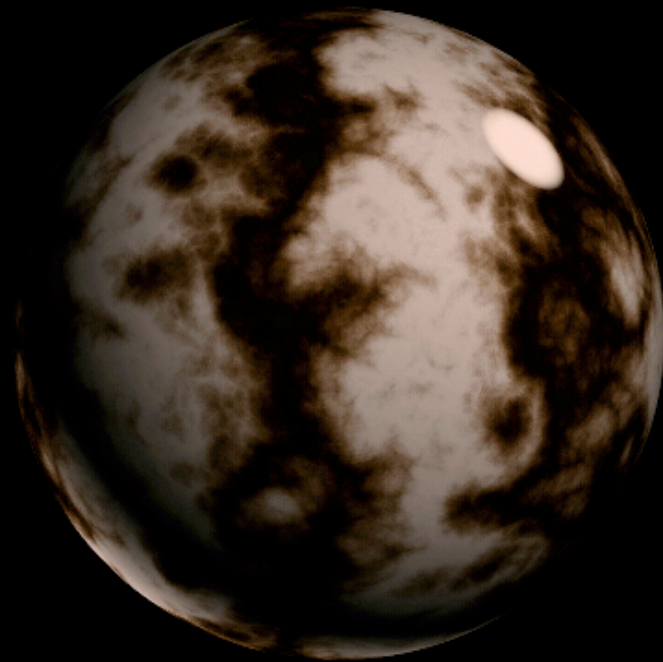
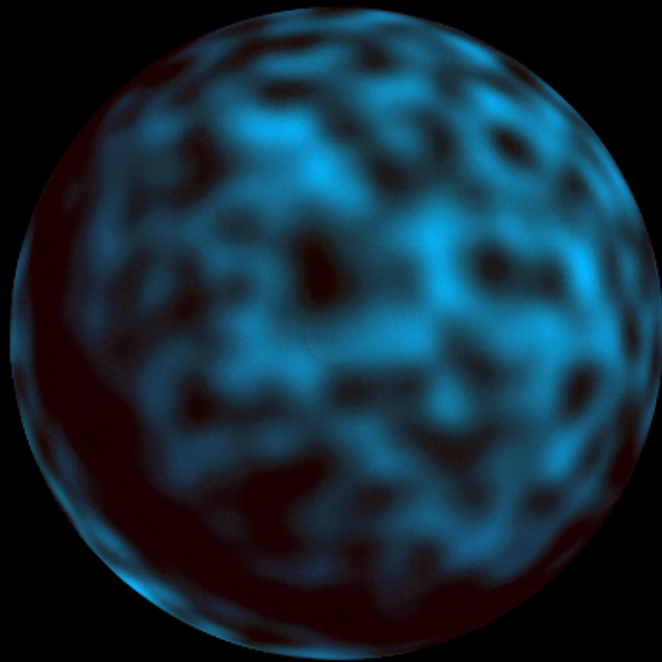


$\text{sum}(1/f(\text{noise}))$

$\text{sum}(1/f(|\text{noise}|))$

[Ken Perlin]





[[Ken Perlin]]