Microfacet Theory



https://learnopengl-cn.github.io/07%20PBR/01%20Theory/

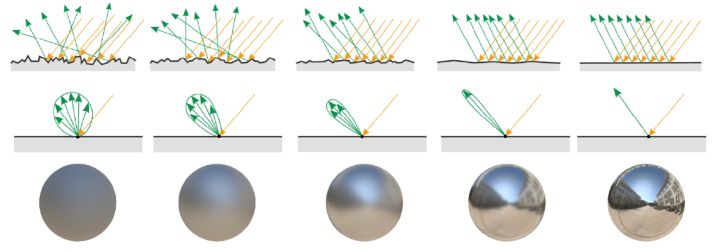
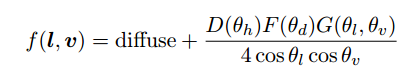


图 微平面粗糙度对材质外观的影响。（图片来自Moving Frostbite to PBR，SIGGRAPH 2014）

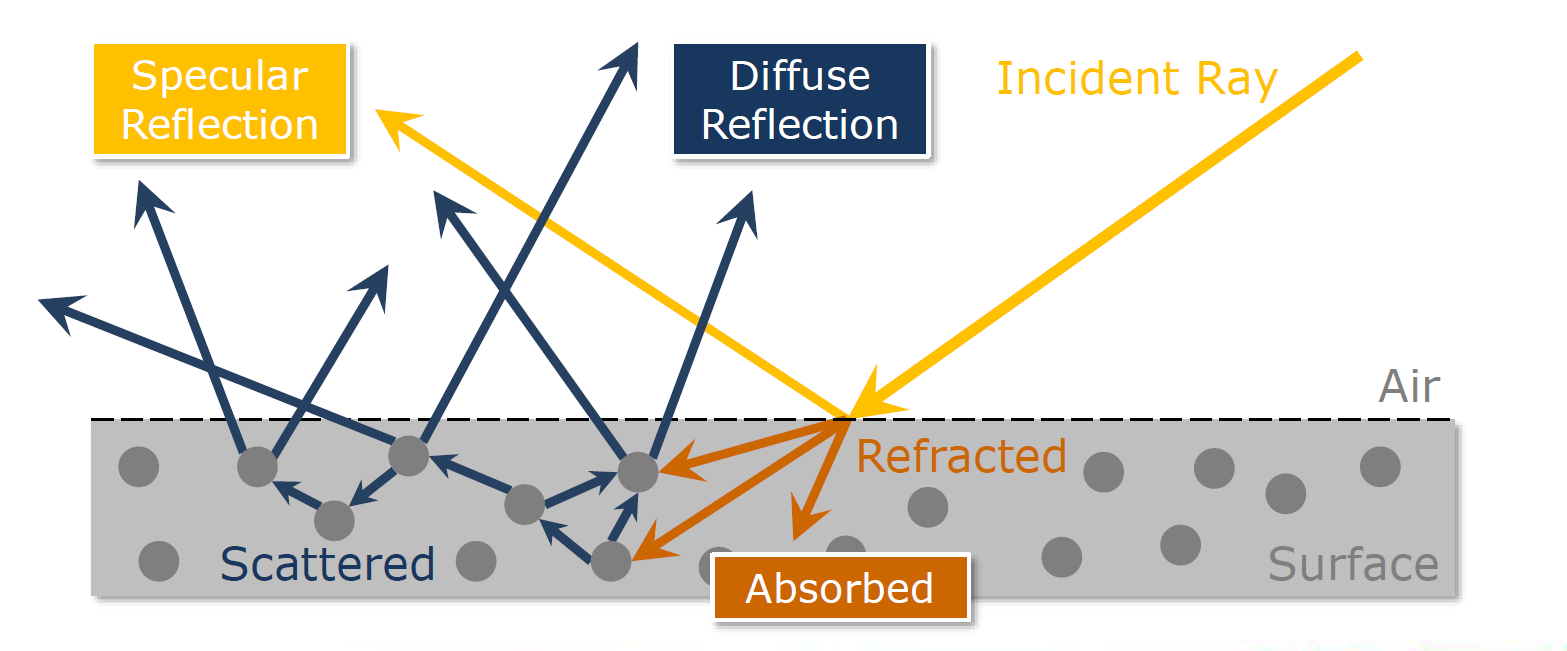


(physically based rendering at Disney)

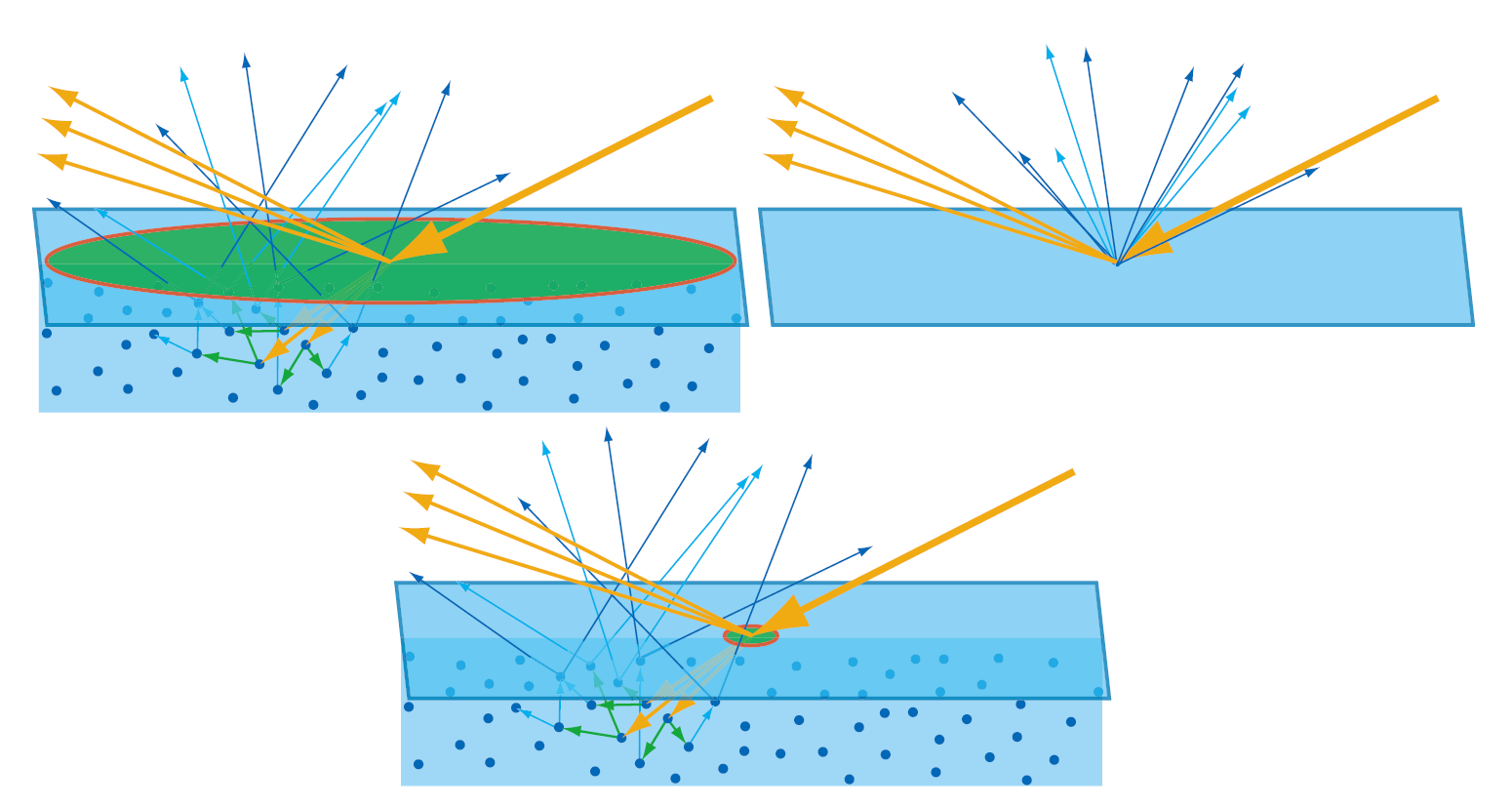
D:Normal Distribution Function，法线分布函数

G:Geometry Function，几何、遮挡项

F：Fresnel Equation，菲涅尔方程/菲涅尔反射项



Fresnel Equation：Maxwell方程组在折射率突变处/物体接触的边界处的特殊解，描述反射与折射的能量关系。SSS和Diffusion本质上是一个事，是散射(scatter)在不同尺度的上建模，当尺度比较宏观时，局部区域的scatter ray可以看作是同一个点出射的diffuse ray.



<https://blog.csdn.net/poem_qianmo/article/details/85239398>

[1]Cook R L, Torrance K E. A reflectance model for computer graphics[C]// 1981:307-316.

[2] JoeyDeVries, PBR : Theory[DB/OL] <https://learnopengl-cn.github.io/07%20PBR/01%20Theory/> ,2019-3

[3]Marco Alamia, Physically Based Rendering: Cook-Torrance[DB/OL]http://www.codinglabs.net/article\_physically\_based\_rendering\_cook\_torrance.aspx,2019-3

[4]Ratkovic J. , Physically Based Rendering[D]//Univeristy of Zagreb, Apr 2017

https://zhuanlan.zhihu.com/p/33464301

Physically Based Rendering at Disney.

很多种可选的Cook-Torrance反射模型的D、G、F项的reference，可以引用下：

<http://graphicrants.blogspot.com/2013/08/specular-brdf-reference.html>

GGX[EG2007] <http://www.cs.cornell.edu/~srm/publications/EGSR07-btdf.pdf>，可参考其Microfacet Theory的简介

https://zhuanlan.zhihu.com/p/56967462