

# RENDERING INTEGRAL

$$I(\vec{x}_c) = I_0(\vec{x}_0) T(\vec{x}_0, \vec{x}_c) + \int_{\vec{x}_c}^{\vec{x}_0} T(\vec{x}_c, \vec{x}) \sigma_\alpha(\vec{x}) I_c(\vec{x}) d\vec{x}$$

- No closed form solution of the integral in general
- Numerical approach to compute volume rendering integral:  
Riemann Sum

$$T(\vec{a}, \vec{b}) = \exp \left( - \int_{\vec{a}}^{\vec{b}} \tau(\vec{x}) d\vec{x} \right)$$

$I$ : Intensity

$\tau$ : Absorption factor

$\sigma$ : Emission / Absorption

Max, Optical Models for Direct Volume Rendering, 1995

# RAYCASTING

- Focus on a single viewing ray first

