Emission Absorption Model

- Assumption
  Volume consists of small particles which are
  - opaque
  - non-reflecting
  - light emitting
  - light absorbing
  - the only light sources in the scene

Rendering Integral

$$I(\vec{x_c}) = I_0\left(\vec{x_0}\right) T\left(\vec{x_0}, \vec{x_c}\right) + \int_{\vec{x_c}}^{\vec{x_0}} T(\vec{x_c}, \vec{x}) \sigma_\alpha(\vec{x}) I_c(\vec{x}) \mathrm{d}\vec{x}$$

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

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

I: Intensity

τ: Absorption factor

σ: Emission / Absorption

Max, Optical Models for Direct Volume Rendering, 1995