

- X is a finite set. E.g. $X = \{S, I, R\}$
- $\hat{\Delta}(X)$ is the probability simplex (positive) on X

$$\sum_{x \in X} p(x) = 1, \quad p(x) > 0$$

- Power transformation $p \mapsto z = \sqrt{p}$

$$\sum_x z(x)^2 = \sum_x p(x) = 1$$

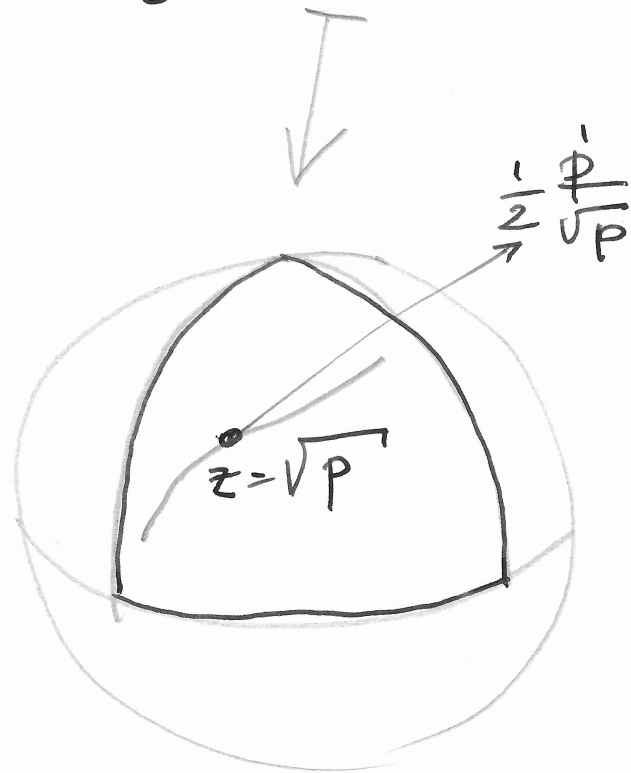
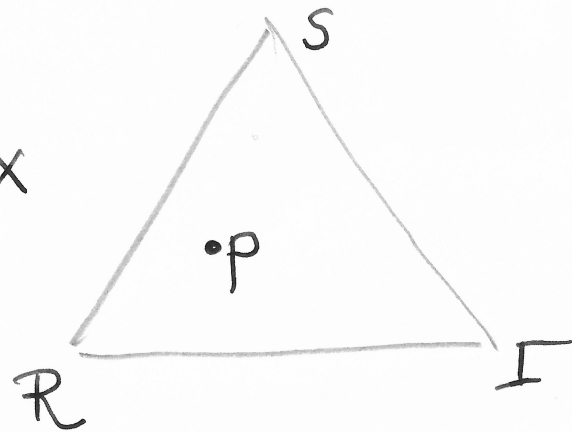
- Velocity $\frac{d}{d\theta} \sqrt{p(\theta)} = \frac{1}{2} \left(\frac{\dot{p}(\theta)}{\sqrt{p(\theta)}} \right)$

- Fibre $\frac{1}{2} \sum_x \frac{\dot{p}(\theta)}{\sqrt{p(x; \theta)}} \sqrt{p(x; \theta)} = 0$

- The length of the velocity squared is

$$\frac{1}{4} \sum_x \left(\frac{\dot{p}(x; \theta)}{\sqrt{p(x; \theta)}} \right)^2 = \frac{1}{4} \sum_x \boxed{\frac{\dot{p}(x; \theta)^2}{p(x; \theta)}}$$

$$= \frac{1}{4} \sum_x \left(\boxed{\frac{\dot{p}(x; \theta)}{p(x; \theta)}} \right)^2 p(x; \theta)$$



Notice the change of notation: $z(x)$, not z_j