

(iii) - EGONKORTASUNERAKO BALDINTZEN ONDORIOZETAPENA **KUANTITATIBOA**

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$$d^2s = \frac{1}{2} [s_{uu} (du)^2 + 2s_{uv} du dv + s_{vv} (dv)^2]$$

$$\frac{1}{T} = \frac{1}{T}(u, v)$$

$$d\left(\frac{1}{T}\right) = \frac{\partial(1/T)}{\partial u} du + \frac{\partial(1/T)}{\partial v} dv \quad \frac{\partial s}{\partial u} = \frac{1}{T}$$

$$d\left(\frac{1}{T}\right) = s_{uu} du + s_{uv} dv$$

$$du = \frac{1}{s_{uu}} [d\left(\frac{1}{T}\right) - s_{uv} dv]$$

$$(du)^2 = \frac{1}{s_{uu}^2} [d\left(\frac{1}{T}\right) - s_{uv} dv]^2$$

$$= \frac{1}{s_{uu}^2} [d^2\left(\frac{1}{T}\right) + s_{uv}^2 (dv)^2 - 2s_{uv} d\left(\frac{1}{T}\right) dv]$$

$$d^2s = \frac{1}{2} [s_{uu} \left\{ \frac{1}{s_{uu}^2} (d^2\left(\frac{1}{T}\right) + s_{uv}^2 (dv)^2 - 2s_{uv} d\left(\frac{1}{T}\right) dv) \right\} + 2s_{uv} \left\{ \frac{1}{s_{uu}} (d\left(\frac{1}{T}\right) - s_{uv} dv) \right\} + s_{vv} (dv)^2]$$

$$d^2s = \frac{1}{2} \left[\frac{1}{s_{uu}} d^2\left(\frac{1}{T}\right) + \left(s_{vv} - \frac{s_{uv}^2}{s_{uu}}\right) (dv)^2 \right]$$

$$d^2s \leq 0$$

$$\frac{1}{s_{uu}} \leq 0$$

$$\left(s_{vv} - \frac{s_{uv}^2}{s_{uu}}\right) \leq 0$$

$$(s_{vv} s_{uu} - s_{uv}^2) \geq 0$$