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## 424. 円系ノ幾何

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吾々ハ円系表面ヲ考ヘ  $t = \text{const.}$ ,  $\tau = \text{const.}$  ハ  
其表面上ノ媒介曲線デアルトスル。

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$\varphi$  を以て測地線が  $\tau = \text{const.}$  トナス角デアルト  
セバ

$$(1) \quad \tan \varphi = \frac{\sqrt{(\theta_t \theta_t)(\theta_\tau \theta_\tau) - (\theta_t \theta_\tau)^2} d\tau}{(\theta_t \theta_t) dt + (\theta_t \theta_\tau) d\tau}$$

此、 $\varphi(t, \tau)$  が合ツタナラバ此、測地線ハ

$$(2) \quad (\theta_t \theta_t) \sin \varphi dt + [(\theta_t \theta_\tau) \sin \varphi - \sqrt{(\theta_t \theta_t)(\theta_\tau \theta_\tau) - (\theta_t \theta_\tau)^2} \cos \varphi] d\tau = 0$$

ヲ積分スルコトニヨリ其ノ式が得ラレル。

尚亦 *orthogonalen Grenzkreise*、式ハ

$$(3) \quad (\theta_t \theta_t) \cos \varphi dt + [(\theta_t \theta_\tau) \cos \varphi + \sqrt{(\theta_t \theta_t)(\theta_\tau \theta_\tau) - (\theta_t \theta_\tau)^2} \sin \varphi] d\tau = 0$$

ヲ積分スルコトニヨリ得ラレル。

尚亦

$$(4) \quad -\frac{(\theta_t \theta_t) \frac{\partial \varphi}{\partial \tau} - (\theta_t \theta_\tau) \frac{\partial \varphi}{\partial t}}{\sqrt{(\theta_t \theta_t)(\theta_\tau \theta_\tau) - (\theta_t \theta_\tau)^2}} dt + \frac{(\theta_\tau \theta_\tau) \frac{\partial \varphi}{\partial t} - (\theta_t \theta_\tau) \frac{\partial \varphi}{\partial \tau}}{\sqrt{(\theta_t \theta_t)(\theta_\tau \theta_\tau) - (\theta_t \theta_\tau)^2}} d\tau$$

ハ一ツノ函数、*vollständige Differential* デアル。

$\varphi = \text{const.}$  ガ *Isothermensystem* ニゾクナルナラバ此、曲線、*orthogonaltrajektorien* ハ

$$(5) \quad \frac{(\theta_t \theta_t) \frac{\partial \varphi}{\partial \tau} - (\theta_t \theta_\tau) \frac{\partial \varphi}{\partial t}}{\sqrt{(\theta_t \theta_t)(\theta_\tau \theta_\tau) - (\theta_t \theta_\tau)^2}} dt - \frac{(\theta_\tau \theta_\tau) \frac{\partial \varphi}{\partial t} - (\theta_t \theta_\tau) \frac{\partial \varphi}{\partial \tau}}{\sqrt{(\theta_t \theta_t)(\theta_\tau \theta_\tau) - (\theta_t \theta_\tau)^2}} d\tau = 0$$

デアル。

尚亦  $t = \text{const.}$ 、 $\tau = \text{const.}$  ノ間ノ角ヲ  $\delta\theta$  ト  
セバ

$$(6) \quad \cos \Omega = \frac{(\theta_t \theta_c)}{\sqrt{(\theta_t \theta_t)(\theta_c \theta_c)}}, \quad \sin \Omega = \frac{\sqrt{(\theta_t \theta_t)(\theta_c \theta_c) - (\theta_t \theta_c)^2}}{\sqrt{(\theta_t \theta_t)(\theta_c \theta_c)}}$$

デアル。

(6) カラ  $\frac{\partial \Omega}{\partial t}$ ,  $\frac{\partial \Omega}{\partial \tau}$  等ヲ求メ得ベシ。