AUSZUG AUS EINEM SCHREIBEN AN HERRN L. BERZOLARI.

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In den *Rendiconti del Circolo Matematico di Palermo*, t. XII, haben Sie die schöne Formel gegeben :

$$\sum_i \frac{(-i)! \binom{2\rho}{i}}{(\lambda-i)! (\mu-i)! (\lambda-2\rho+i)! (\mu-2\rho+i)!} = \frac{(-1)^\rho \binom{\lambda+\mu-\rho}{\rho} (2\rho)!}{\lambda! \mu! (\lambda-\rho)! (\mu-\rho)!}.$$

Dieselbe kann in folgender Weise bewiesen werden.

§ 1. — Die u_ν .

$$p_n = 2\rho - 1, 2\rho - 3, \dots, 2\rho - 2n + 1 = (2\rho - 2n + 1)p_{n-1},$$

$$q_n = 1, 3, 5, \dots, 2n - 1 = (2n - 1)q_{n-1},$$

$$u_n = \sum_r p_{n-r} q_r \binom{n}{2r} (x_1 - x_2)^{2\rho - 2n + 2r} (x_1 + x_2)^{n - 2r},$$

also :

$$u_0 = (x_1 - x_2)^{2\rho}; \quad u_\rho = \frac{1}{2} \frac{(2\rho)!}{\rho!} (x_1^\rho + x_2^\rho),$$

$$\frac{\partial \frac{u_n}{x_1 - x_2}}{\partial (x_1 - x_2)} = \sum_r p_{n-r+1} q_r \binom{n}{2r} (x_1 - x_2)^{2\rho - 2n + 2r - 2} (x_1 + x_2)^{n - 2r},$$

$$\frac{\partial \frac{u_n}{x_1 + x_2}}{\partial (x_1 + x_2)} = \sum_r p_{n-r+1} q_r \binom{n}{2r-1} (x_1 - x_2)^{2\rho - 2n + 2r - 1} (x_1 + x_2)^{n - 2r + 1}.$$

§ 2. — Die a_n .

$$-(\lambda + \mu - n + 1)(n - 2i - 1) = (\lambda - n + i + 1)(\mu - n + i + 1) - (\lambda - i)(\mu - i),$$

$$\begin{aligned} & - \frac{(\lambda + \mu - n + 1)(n - 2i - 1)}{(\lambda - i)! (\mu - i)! (\lambda - n + i + 1)! (\mu - n + i + 1)!} \\ & = \frac{1}{(\lambda - i)! (\mu - i)! (\lambda - n + i)! (\mu - n + i)!} \\ & - \frac{1}{(\lambda - i - 1)! (\mu - i - 1)! (\lambda - n + i + 1)! (\mu - n + i + 1)!}. \end{aligned}$$

Für:

$$a_{n,1}^{n-i} a_{n,2}^i = \frac{1}{(\lambda - i)! (\mu - i)! (\lambda - n + i)! (\mu - n + i)!},$$

wird:

$$a_{\rho,1}^\rho = a_{\rho,2}^\rho = \frac{1}{\lambda! \mu! (\lambda - \rho)! (\mu - \rho)!},$$

$$(a_{n,1} - a_{n,2}) a_{n,1}^{n-i-1} a_{n,2}^i = -(\lambda + \mu - n + 1)(n - 2i + 1) a_{n-1,1}^{n-i-1} a_{n,2}^i,$$

$$u_0(a_{2\rho}) = \sum_i (-1)^i \binom{2\rho}{i} \frac{1}{(\lambda - i)! (\mu - i)! (\lambda - 2\rho + i)! (\mu - 2\rho + i)!},$$

$$u_\rho(a_\rho) = \frac{(2\rho)!}{\rho!} \frac{1}{\lambda! \mu! (\lambda - \rho)! (\mu - \rho)!}.$$

§ 3. — *Der δ Process.*

$$\begin{aligned}\delta\varphi &= x_1 \frac{\partial \frac{\varphi}{x_1 - x_2}}{\partial x_1} - x_2 \frac{\partial \frac{\varphi}{x_1 - x_2}}{\partial x_2} \\ &= (x_1 + x_2) \frac{\partial \frac{\varphi}{x_1 - x_2}}{\partial (x_1 - x_2)} + (x_1 - x_2) \frac{\partial \frac{\varphi}{x_1 - x_2}}{\partial (x_1 + x_2)};\end{aligned}$$

$$\delta u_n = u_{n+1}, \quad \delta_\rho u_0 = u_\rho;$$

$$(a_{n,1} - a_{n,2}) a_{n,1}^{n-1-i} a_{n,2}^i = -(\lambda + \mu - n + 1) \delta[(a_{n-1,1} - a_{n-1,2}) a_{n-1,1}^{n-1-i} a_{n-1,2}^i],$$

$$\varphi(a_n) = -(\lambda + \mu - n + 1) \delta \varphi(a_{n-1}),$$

$$\begin{aligned}u_0(a_n) &= (-1)^\rho \rho! \binom{\lambda + \mu - \rho}{\rho} \delta_\rho u_0(a_\rho) \\ &= (-1)^\rho \rho! \binom{\lambda + \mu - \rho}{\rho} u_\rho(a_\rho).\end{aligned}$$

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