If the boundary ∂B is smooth enough, we are able to estimate the rate of convergence in (1). For example, if ∂B is the union of m algebraic surfaces of degree at most d, then for $n \geqslant 3$ the rate of convergence in (1) can be estimated as $C_{n,m,d}\, Q^{-1}$, where $C_{n,m,d}$ depends only on n, m, d and on the height function h.

It turns out that the function $\rho_{k,l}$ coincides with the correlation function of the roots of some specific random polynomial. Moreover, there exist explicit symmetric functions $\psi_m : \mathbb{C}^m \to \mathbb{R}_+$ (depending on n) such that all the functions $\rho_{k,l}$ satisfy the equality

$$\rho_{k,l}(x_1, \ldots, x_k, z_1, \ldots, z_l) = 2^l \psi_{k+2l}(x_1, \ldots, x_k, z_1, \ldots, z_l, \overline{z}_1, \ldots, \overline{z}_l).$$

Every ψ_m can be represented as the product of $\prod_{1\leqslant i<j\leqslant m} |z_i - z_j|$ and a continuous function.

[1] F. Götze, D.V. Koleda, D.N. Zaporozhets. Joint distribution of conjugate algebraic numbers: a random polynomial approach // arXiv:1703.02289, 2017.

ON PELL IDENTITIES WITH MULTINOMIAL COEFFICIENTS

T. Goy (Vasyl Stefanyk Precarpathian National University, Ivano-Frankivsk, Ukraine)

The *Pell numbers* are an integer sequence defined recursively by $P_0 = 0$, $P_1 = 1$, and $P_n = 2P_{n-1} + P_{n-2}$ for all $n \geqslant 2$ (see [1] and the references given there).

Proposition. *Let $n \geqslant 1$, except when otherwise. The following formulas hold*:

$$\sum_{(t_1,\ldots,t_n)} (-1)^T p_n(t) P_1^{t_1} P_2^{t_2} \cdots P_n^{t_n} = -F_n,$$

$$\sum_{(t_1,\ldots,t_n)} (-1)^T p_n(t) P_1^{t_1} P_3^{t_2} \cdots P_{2n-1}^{t_n} = -4 \cdot 5^{n-2}, \quad n \geqslant 2,$$

$$\sum_{(t_1,\dots,t_n)} (-1)^T p_n(t) P_2^{t_1} P_4^{t_2} \cdots P_{2n}^{t_n} = \frac{(2-\sqrt{3})^n - (2+\sqrt{3})^n}{\sqrt{3}},$$

$$\sum_{(t_1,\dots,t_n)} (-1)^T p_n(t) P_3^{t_1} P_5^{t_2} \cdots P_{2n+1}^{t_n} = -4, \quad n \geqslant 2,$$

$$\sum_{(t_1,\dots,t_n)} (-1)^T p_n(t) P_2^{t_1} P_3^{t_2} \cdots P_{n+1}^{t_n} = 0, \quad n \geqslant 3,$$

$$\sum_{(t_1,\dots,t_n)} (-1)^T p_n(t) P_0^{t_1} P_1^{t_2} \cdots P_{n-1}^{t_n} = -2^{n-2}, \quad n \geqslant 2,$$

$$\sum_{(t_1,\dots,t_n)} (-1)^T p_n(t) P_3^{t_1} P_4^{t_2} \cdots P_{n+2}^{t_n} = (-1)^n F_{2n+3},$$

$$\sum_{(t_1,\dots,t_n)} p_n(t) P_0^{t_1} P_1^{t_2} \cdots P_{n-1}^{t_n} = \frac{(1+\sqrt{3})^{n-1} - (1-\sqrt{3})^{n-1}}{2\sqrt{3}},$$

$$\sum_{(t_1,\dots,t_n)} p_n(t) P_0^{t_1} P_2^{t_2} \cdots P_{2n-2}^{t_n} = \frac{(3+\sqrt{10})^{n-1} - (3-\sqrt{10})^{n-1}}{\sqrt{10}},$$

where the summation is over integers $t_i \geqslant 0$ satisfying $t_1 + 2t_2 + \cdots + nt_n = n$, $T = t_1 + \cdots + t_n$, F_n is the n-th Fibonacci number, and $p_n(t) = \frac{(t_1+\cdots+t_n)!}{t_1!\cdots t_n!}$ is the multinomial coefficient.

[1] T. Koshy. Pell and Pell-Lucas Numbers with Applications. Springer, 2014.

DISTRIBUTION OF VALUES JORDAN'S FUNCTION IN RESIDUE CLASSES

L. A. Gromakovskaja, B. M. Shirokov
(Petrozavodsk State Universisty, Petrozavodsk, Russia)

The pair of integers a, b is called primitive modulo integer n if the greatest common divisor $(a, b, n) = 1$. Let's denote by $J(n)$ the number of incongruent primitive pairs of integers modulo n. This function is called Jordan's function. The properties of $J(n)$ were studied in [1].

Let's denote by $S(x, r, f)$ for $x > 0$, integers r, N, $(r, N) = 1$, and integral-value arithmetical function $f(n)$ the number of integers $n > 0$ for which $f(n) \equiv r$