7. Results related to the sets of biblical names and repetitions.

8. Other local conditions, random variables ξ_2^c, ξ_3^c. Distinguishing the system of shifts typical for the subset of the list duplicates.

9. The card deck problem.

10. Relation matrix: preliminaries.

11. Principal definitions. Assumptions about the structure of the correct chronological list.

12. Relation measure. Problem of separation of strong and weak relations (threshold choice). Matrix local maxima.

13. Frequency histograms for showing relations. Two additional relation measures leading to the same picture. Choice of thresholds.

14. Results related to the popes' list.

15. Results related to the Roman emperors' list.

16. Comparison with the decomposition of the GCD. Some remarks.

2. Name list of secular or church rulers. Consider first the chronological list of secular or church rulers. Normally, each ruler has several names. We will assume that all the names of a ruler are listed consecutively in the appropriate place on the list, and that there are no separation signs between the names of neighbouring personages (in time). Order the list with respect to the middle year of the rule interval, and denote it by $X = \{a_1, a_2, \dots, a_N\}$. We assume a decomposition of the list X into chapters $X_1, X_2, , \dots, X_n$ given. Denote by $I = \{u_1, u_2, \dots, u_m\}$, $m \leqslant N$, the set of different names in X, and the name of the ith entry for X by $u(a_i)$, $u(a_i) \in I$.

Definition 1. We call the integer $\varrho(a_i, a_j) = |r - s|$ the *scattering of two list entries* $a_i, a_j \in X,\ a_i \in X_s,\ a_j \in X_r$.

Definition 2. We will say that two names $u_l, u_k \in I$ *are of the same age*, and denote the fact by $u_l \approx u_k$, if their first occurrences are in one chapter of X.

Definition 3. We will say that two names $u_l, u_k \in I$ are *conjugate*, and denote the fact by $u_l \sim u_k$, if there exists a chapter X_p in X, containing both.

If two entries a_i and a_j from a list X are conjugate (or of the same age) as two names from I, then we will also call them conjugate (resp. of the same age), and employ the corresponding notation.

Consider a finite stochastic model (Ω, Σ, P) of sampling with equal probability with replacement of two elements from X. Thus, $\Omega = X \times X$, $\Sigma = 2^\Omega$, $P(w) = 1/N^2$ for any $w \in \Omega$. We will denote the first selected element by $a_{(1)}$, and the second by $a_{(2)}$. Consider the scattering of the pair $a_{(1)}$, $a_{(2)}$,

$$\xi_1(w) = \varrho(a_{(1)}, a_{(2)}). \tag{1}$$

It is a random variable defined on Ω.

We will assume that the events $A = \{w:\ a_{(1)} \approx a_{(2)}\}$ and $B = \{w:\ a_{(1)} \sim a_{(2)}\}$ are non-zero, and $P(A) \neq 0,\ P(B) \neq 0$. Consider the conditional probabilities P_A and P_B on Ω, viz.,

$$P_A(C) = \frac{P(AC)}{P(A)}, \qquad P_B(C) = \frac{P(BC)}{P(B)}, \qquad \forall C \in \Sigma.$$