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Повышенные требования к машине привели, после того как эта статья была уже написана, к необходимости провести некоторые усовершенствования. Реле генератор был заменен ротационным генератором, который гарантирует надежное разделение пульсов (M. Novák, *Fysikální věstník ÚTF* том 3 № 3/4). Первоначальная двоичная типография была заменена декодером до восьмичной системы с дальнепишущим аппаратом, который печатает плотность электронов прямо на узких полосках бумаги, наклеиванием которых, без переписывания; получаем непосредственно карты Фурье [Líněk Allan, *Sborník ÚMS* № IV 1956, в печати].

COMPUTING MACHINE FOR FOURIER'S SYNTHESIS

(Abstract of preceding paper)

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One of the main tasks in solving crystal structures is the calculation of the Fourier series which gives the density of the electrons in the crystal lattice. The paper describes a relay computing machine, produced in the author's laboratory, which works out the relation

$$\rho(x) = \sum_{h=0}^{15} A_h \cos 2\pi hx + \sum_{h=1}^{15} B_h \sin 2\pi hx,$$

to which form the general relation (1) can always be reduced. The machine is made up of currently produced and accessible parts, i. e. relays, uniselector switches, and adding and printing units, designed by members of the Laboratory of Mathematical Machines of the Czechoslovak Academy of Sciences and made in Aritma, national enterprise.

The machine itself is made up of individual blocks connected as shown in Fig. 1. These include the multiplication equipment N which together with the pulse generator G controls the machine. Information from the multiplication equipment comes to block h , hx and the cosine and sine of argument $2\pi hx$ memory, where the corresponding values of the functions are chosen; these values, together with the information of the magnitude of the coefficients A_h and B_h , are then returned to the multiplier N , which works them up and by means of a translating stage passes them on to the adding unit. The results of the addition are recorded by the printing unit. The machine is designed for the following ranges of constants and data: A_h/B_h positive and negative from 0 to 1024, h from 0 to 15, division of the cell 1/120, 1/60, or 1/40 of the circumference of the circle. The calculations can also be carried out in the neighbourhood of the maxima of function (1) and if necessary restricted to some quadrants.

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