spot respectively. In the general form

$$W'_\lambda = \frac{\int_0^{2\pi}\int_0^{\pi/2} \Phi(\theta, \psi) G \sin\theta \cos\theta \, d\psi \, d\theta}{\int_0^{2\pi}\int_0^{\pi/2} D \sin\theta \cos\theta \, d\psi \, d\theta};$$

here $\Phi(\theta, \psi)$ in some general law of line-intensity distribution for some element over the surface of the star in the given phase. The integral in the numerator is S(P), in the denominator S*; S* is easily found when the law of limb darkening of the continuous radiation is given.

From the comprehensive study of all the available spectral data, we derived for the law $\Phi(\theta, \psi)$ three expressions: $\sin^3\{a\varphi_m + [(1+a)\pi/2]\}$ for the rare earths (φ_m is the magnetic latitude, a is a parameter that is different for different elements); $\cos^2\alpha$ for the elements of the iron peak, where α is the angular distance from the center of the spot, and $\cos^2(\alpha/2)$ for Si II. The areas S(P) for the elements which have a sufficient number of the lines used for constructing the growth curves were computed for a number of phases. The procedure for finding the laws $\Phi(\theta, \psi)$ and the mathematical details of the computation of S(P) are presented in [5]. We constructed for the entire set of chemical elements more than 20 separate growth curves, from which we found, using the standard method, the "observable" values of the microturbulence velocities v'_t. Investigation of the problem showed that to obtain the true value (v_t) of the velocity in a given spot, the relation $v_t = v'_t r$ must be used. The values of r for different elements in different phases range from 1.5 to 5. This means that the values of v'_t obtained from a growth curve by the "standard" method should be increased 1.5–5 times. Computing the magnetic coordinates of the center of each spot on the stellar surface, we find that the turbulence velocities vary over the stellar surface from 1.5–2.0 km/sec near the equator to 11–13 km/sec at the latitude $\varphi_m = \pm 45°$.

The illustrative determination of v_t for α^2CVn already shows that if we want to study the atmospheres of magnetic stars through their spectra, then a substantial modification of the existing methods of investigation is necessary.

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M. I. Elinson. Problems of Functional Microelectronics. Microelectronics is the new scientific-technical direction in radioelectronics that is solving the problem of the construction of complex radioelectronic equipment with preset operational parameters, the requisite degree of reliability, and acceptable dimensional, energy, and cost characteristics by the method of cell (technological) and functional (physical) integration accompanied by equipment-component microminiaturization.

Microelectronics has produced a radical change in the approach to circuit design, has produced a permanent fusion of physics, chemistry, technology, circuit engineering and cybernetics, and has, in the final analysis, caused a radical reorganization of the electronics industry.

Cell integration has preserved the old principle of radioelectronics based on the fact that the realization of any function presupposes the development of an electrical circuit that operates according to the laws of circuit theory.

This is the cause of the sharp rise in the complication of equipment in proportion to the complication of the function to be performed. It turns out that even at the high and optimum degree of integration ($\gtrsim 10^3$ components to a crystal) equipment reliability, which will be required within the next few years, will be intolerably low.

A general formulation of the problem of the optimum physical realization of the means of processing large masses of information is necessary. One of the possible ideas for the solution of this problem is the idea of functional microelectronics (FME).

The essence of FME consists in an attempt to find a new system of basic radioelectronic elements which would, in contrast to the traditional elements (e.g., transistors), possess more abundant functional possibilities.

Several directions for FME are discussed: optoelectronic devices which are primarily applicable to the problems of bionics, since neuronlike cells are promising elements for the construction of the next-generation computers; new semiconductor devices, such as Gunn and S diodes, and devices with charge migration; acoustoelectronic devices based on the interaction of current carriers with acoustic waves; and magnetic devices based on the use of cylindrical magnetic domains.

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K. A. Valiev. Present-day Semiconductor Microelectronics and the Prospects of its Development. The most typical product of microelectronics is semiconductor integrated circuits, which are a group of electronic devices (transistors, diodes, resistances, capacitors) realized in a single technological process in a single semiconductor crystal and connected together by thin pellicular metallic conductors into an electronic device—"circuit." Typical values of the area of the integrated-circuit "crystal" range from 1 to 10 mm^2; the number of electronic devices constructed on such a crystal and joined into a circuit varies from scores to several thousands. The area occupied by one element on the crystal ranges from 10^{-3} to 10^{-2} mm^2. The electrical insulation of the elements from each other is realized by means of counter-biased p-n junctions or thin layers of a dielectric.

Figures 1 and 2 show the structures of the most typi-