V.M.BABICH

WAVES IN THE ANISOTROPIC MEDIUM AND ENERGETIC THEOREMS

In seventies of last century a young physicist N.A.Umov defended his thesis, where an important equality was deduced. This equality with the contemporary notation

$$\frac{\partial E}{\partial t} + div\vec{S} = 0,$$

here E is the density of the energy,$\vec{S}$ vector of the energy flux. The thesis contained in addition the assertion that the energy flows in physical media as a liquid in the process of wave propagation satisfying the classical hydrodynamical continuity equation.The conception of the energy was not customary at that distant time.N.A.Umov ideas was not expressed in the rather clear form.It was naturally enough that the standing for the degree was violent.Dicussion continued during 3 hours...

To all appearance these ideas was expressed too early. Only many decades later their understanding came.It was obtained,that they are connected with asymptotic methods of mathematical theory of wave phenomena.A hydrodynamical equation,goes back to N.A.Umov thesis gives the possibility to integrate in explicit form so-called transport equations of ray method.The solution has the clear physical interpretation.

It is convenient to illustrate "the drama of ideas "an echo of which was concerned here by the mathematical description of the process of wave propagations in anisotropic elastic medium.