young

With his 1st Prof. Yu.B. Rumer circa 1965

age ~ 17

youngest

In 1965, at age 17, with his first professor, Yu.B. Rumer.
I read and photocopied this paper in 1977. 5 years later I brought it with me to Stony Brook. Nearly 10 years later, Ed arrived in person.

We're happy he's here!

Finally, the last example which has no application significance, but is quite interesting, refers to the solar system. Could one of the planets be expelled from it to infinity? A negative answer has been "proved" repeatedly in the sense that ever weaker instabilities have been eliminated. In accordance with\cite{5} the Kolmogorov instability can be destroyed by effects of the Arnol'd diffusion type. This means that the times for the development of instabilities for all the large planets are much greater than the time of existence of the Universe, while for certain asteroids this is not so, and this enables one to explain the so-called Kirkwood gaps in the case of resonances with Jupiter.\cite{6}

The quantum condition for the existence of stochastic layers (30) restricts the smallness parameter of the perturbation to a value of the order of $10^{-6}$, while its actual value roughly speaking is

$$
\epsilon \sim \frac{\omega M}{M_p}, \quad q = |n_1 - n_2|
$$

where $n_1$, $n_2$ are obtained from the resonance condition $\omega_1 = \omega_2$, $M$, $M_p$ are the masses of the planet and of the sun, $\epsilon$ is the eccentricity of the orbit. Even in the case of Jupiter $M/M_p = 10^{-4}$, while $\epsilon$ is of the order of a percent. As a result of this condition (30) is in general not satisfied for all the planets, i.e., Arnol'd diffusion does not exist even in the academic formulation of the problem for infinitely long times. For resonance asteroids, (33) exceeds $10^6$ at $q \leq 4$. 

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1. INTRODUCTION

In recent years significant progress has been achieved in understanding the overall picture of the motion of an $n$-dimensional classical system of a general form. It is due to the work of mathematicians, in particular that of Kolmogorov and Arnol'd,\cite{1-2} to the development of the theory and practice of such systems as accelerators of elementary particles, plasma oscillations etc., in particular to "mathematical experiments" using electronic computers with different model systems.\cite{4-7} This theory is based on a consistent taking into account