DEFINITION OF THE CONCEPT OF QUASISTATIONARY STATES. CONNECTION BETWEEN STARK STATES OF AN ATOM IN A UNIFORM ELECTRIC FIELD AND "STANDARD" AUTOIONIZING STATES OF ATOMS.

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We consider one-dimensional square-well potential and show that there are two possibilities to introduce the concept of quasistationary states when potential becomes unbounded. At the time when basic principles of quantum mechanics were formulated the problem we are examining was far beyond possibilities of experimental verification. Evidently, for such reason, it was not considered before and later on forgotten. With the advent of laser technique and possibility for study of highly excited states of atoms the experimental situation has changed drastically. In paper [1] we explained qualitatively so called Stark states stabilization of Na by numerical solution of Schrödinger equation. Now we explain the essential physics of the phenomenon by using simple model.

We show also close and natural relation between spectrum of doubly excited atoms and spectrum of a hydrogen atom in the presence of the uniform electric field. Comparisons with the experimental results will be presented.

1. R. Damburg, B. Baranovskii and H. Silverstone // Zh. Eksp. Teor. Fiz. 1993. V 103 p.1981 [JETP 1993. V. 76 p.983].