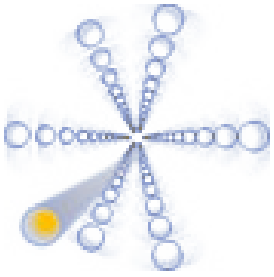

Contribution ID: **171** Type: **Oral**

DD Fusion in Conducting Crystals

Monday, 6 October 2014 10:45 (15 minutes)

The paper presents a brief background on cold fusion leading to a discussion on some aspects of atomic physics. We are explaining the selection of the only permitted orbitals of deuterium atoms in conducting crystals when saturated with deuterium. Conduction electrons in metallic crystal are grouped in potential niches of the crystal lattice, resulting in a ban for s-states of hydrogen to occupy these same niches. At the same time, the filling of these niches with deuterium atoms is allowed for the excited atomic states of level 2p and above.

As has been shown in experiments on deuterium-deuterium (DD) fusion with low energy accelerators, if an atom of deuterium target is located within a conducting crystal, this reaction is much more probable than in the case of free atoms of deuterium.

When a single crystal niche gets two such atoms of deuterium, the distance between the nuclei of these atoms becomes equal to 1/10–1/20 of the nominal size of these atoms. Theoretical calculations show that this is equivalent to the additional energy 300–700 eV for the fusion reaction DD⟶4He*.

We believe that this process of excitation of atomic states to the 2p level and above explains the first stage of the so-called cold fusion.

References

1. E. N. Tsyganov, “DD fusion in conducting crystals”, Инженерная Физика № 6. 2014, p. 6-13.

Primary author: Dr TSYGANOV, Edward (UTSWMC)

Presenter: Dr TSYGANOV, Edward (UTSWMC)

Session Classification: S1: Channeling & Radiations in Crystals