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"The Coulomb Barrier not Static in QED". A correction to the Theory by Preparata on the Phenomenon of Cold Fusion and Theoretical hypothesis.

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Abstract

In the last decades, irrefutable experimental evidence has been produced about (Low Energy Nuclear Reaction) phenomena (LERN) in specialized heavy hydrogen systems [1-4]. Nevertheless, we are still confronted with the problem that theoretical statements of LERN are not known; as a matter of fact, no research has been carried out on this subject, yet. In this work we seek to analyse the deuteron-deuteron reactions within palladium lattice by means of Preparata model of palladium lattice [5,15]. We will also show the occurrence probability of fusion phenomena according to more accurate experiments [6]. We are not going to use any of the research models which have been previously followed in this field. Our aim is to demonstrate theoretically the possibility of cold fusion. Moreover, we will focus on tunneling the existent Coulomb barrier between two deuterons. Analysing the possible contributions of lattice on improving the tunneling probability, we will find that there is a real mechanism through which this probability could be increased: this mechanism is the screening effect due to d-shell electrons of palladium lattice. The accordance between theoretical and experimental results will prove the reality of cold fusion phenomena and the reliability of our model.