

Localized waves in silicates. What we know from experiments?

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Abstract: Since the latest review about solitary localized waves in muscovite, called quodons, [FM Russell, Springer Ser. Mater. Sci. 221 (2015) 3] there have been many developments, specially from the point of view of experiments, published in several journals. The breakthrough hypothesis that was advanced in that review that dark tracks were produced by positive electrical charge moving in a localized wave, either transported by swift particles or by nonlinear localized waves, has been confirmed by experiments in muscovite and other silicates. In this paper we review the experimental results, some already published and some new, specially the phenomenon of charge transport without an electric field, called hyperconductivity. We also consider alternative explanations as phase transitions for other tracks. We also describe numerical simulations that have confirmed the order of magnitude of quodons energy and calculations underway to determine more properties of electron and hole transport by quodons.

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