Values of the deformation parameters for 11 even-even nuclei were also cited in the paper by Gol’din and Ter-Martirosyan\(^5\) (Table IX) where they were obtained as a result of the numerical solution of an initial exact equation describing \(\alpha\) decay. A comparison of our results with the values of \(\alpha\) obtained by these authors\(^5\) shows that they practically coincide with each other — the deviation does not exceed 10%.


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RESONANCE TRANSITIONS IN PARALLEL FIELDS IN CERTAIN Mn\(^{++}\) AND Fe\(^{+++}\) SALTS

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Submitted to JETP editor April 9, 1959


Kurushin\(^1\) and Kutuzov\(^2\) have communicated that at \(\nu \sim 10^{10}\) Cps at room temperature the \(\chi''(H)\) absorption curves in certain Mn\(^{++}\) and Fe\(^{+++}\) salts possess a maximum when investigated in parallel fields (an oscillating magnetic field \(H_\nu\) directed parallel to a constant magnetic field \(H\)).

This absorption in parallel fields was explained by a spin–spin relaxation and identified with the phenomenon discovered experimentally by Gorter et al.\(^3\) In addition it was also noted in references 1 and 2 that the experimental \(\chi''(H)\) curves do not fit Shaposhnikov's theory.\(^4\)

As is known, for certain Mn\(^{++}\) and Fe\(^{+++}\) salts\(^5\) in perpendicular fields, at \(\nu \sim 10^{10}\) cps and room temperature, a peak due to the forbidden transition from \(\Delta m = \pm 2\) is observed in addition to the main resonance peak corresponding to the allowed transition from \(\Delta m = \pm 1\). The intensity of this peak is approximately a hundred times smaller than the intensity of the main peak.

Our measurements of \(\chi''(H)\) at 9500 Mc/s and \(T = 295^\circ\)K in FeNH\(_4\)(SO\(_4\))\(_2\)·12H\(_2\)O have shown that in the course of a smooth change from perpendicular to parallel fields (the angle between \(H_\nu\) and \(H\) changes from 90° to 0°) the intensity of the peak for the transition from \(\Delta m = \pm 2\) increases by approximately one order of magnitude, while the intensity for \(\Delta m = \pm 1\) decreases practically to zero. At the same time, the resonance value of the intensity of the constant magnetic field \(H = 1680\) oersteds remains unchanged for the transition from \(\Delta m = \pm 2\).

On the basis of this experiment, we can draw the conclusion that the maximum absorption \(\chi''(H)\) in parallel fields observed by Kurushin and Kutuzov is not caused by spin–spin relaxation, but by resonance. There are grounds to believe that the phenomena discovered by Gorter in parallel fields at lower frequencies of \(H_\nu\) are also, in a number of instances, due to resonance transitions.


\(^3\)Smits, Derkson, Verstelle, and Gorter, Physica 22, 773 (1956).


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