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Triplet spin resonance of the Haldane compound with interchain coupling

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Collective triplet excitations in the Haldane-like magnet $PbNi_2V_2O_8$ present an example of new kind of spin dynamics. The spectrum of triplet excitations was found to be temperature dependent, indicating a nonlinear renormalization of the excitations energy. The 3D interchain coupling allows here the transition from a spin-liquid to an antiferromagnetic phase in a magnetic field, closing the spin gap. This ordering modifies the spectrum of triplet excitations both above and below the critical field. The measured spectrum of triplet excitations demonstrated a strong deviation from the perturbative approach for noninteracting chains [1], while is in agreement with a macroscopic approach implying the field-induced ordering at the critical field [2].

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