

Abstract Submitted  
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**Anisotropic phase diagram of the rare-earth hyperkagome system  $\text{Gd}_3\text{Ga}_5\text{O}_{12}$  (GGG)<sup>1</sup>** JEFFREY QUILLIAM, ALEXANDRE ROUSSEAU, JEAN-MICHEL PARENT, Universite de Sherbrooke — An understanding of the low-temperature properties of the hyperkagome system  $\text{Gd}_3\text{Ga}_5\text{O}_{12}$  or GGG is a long-standing problem in the field of frustrated magnetism. The origins of spin liquid and exotic spin-glass phases in this material remain mysterious and even its precise magnetic phase diagram is still not firmly established. We have investigated the field-induced phase diagram of this material using the ultrasound velocity and attenuation technique at temperatures as low as 40 mK. Two different field orientations are tested, and give rise to significant quantitative and qualitative differences. Notably, two distinct field-induced antiferromagnetic phases are observed for field parallel to 110, consistent with recent results\*, whereas only one ordered phase is observed for a 100 orientation. The field dependence of the sound velocity and attenuation is also found to be anisotropic within the low-field spin liquid phase.

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