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FMR study of thin film FeGe skyrmionic material[1] VIDYA P. BHALLAMUDI, MICHAEL R. PAGE, JAMES GALLAGHER, CAROLA PURSER, JOSEPH SCHULZE, FENGYUAN YANG, P. CHRIS HAMMEL, Ohio State Univ - Columbus — Magnetic Skyrmions have attracted intense interest due to their novel topological properties and the potential for energy efficient computing. Magnetic dynamics play an important part in enabling some of these functionalities. Understanding these dynamics can shed light on the interplay of the various magnetic interactions that exist in these materials and lead to a rich magnetic phase diagram, including the Skyrmion phase. We have grown phase-pure FeGe epitaxial films on Si (111) and studied them using ferromagnetic resonance (FMR). FeGe has one of the highest recorded skyrmion transition temperatures, close to room temperature, and thin films are known to further stabilize the Skyrmion phase in the magnetic field-temperature space. We have performed cavity-based single frequency FMR from liquid nitrogen to room temperature on 120 nm thick films in both in-plane and out-of-plane geometries. The resulting complex spectra are consistent with those reported in literature for the bulk material and can be understood in terms of a conical model for the magnetism. Variable temperature broadband spectroscopy and measurements on thinner films, to better identify the various magnetic phases and their dynamic behavior, are ongoing and their progress will be discussed.

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