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Title:	Domain structure evolution in the ferromagnetic Kagome-lattice Weyl semimetal Co ₃ Sn ₂ S ₂
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Abstract:	Co ₃ Sn ₂ S ₂ , a Weyl semimetal that consists of layers of Kagome lattices, undergoes a transition from a high temperature paramagnetic phase to a low temperature ferromagnetic phase below 177 K. The phase transition occurs through an intermediate non-trivial magnetic phase, the so called 'A'-phase just below the Curie temperature. The 'A'-phase was earlier linked with a competing anti-ferromagnetic phase, a spin-glass phase and certain indirect measurements indicated the possibility of magnetic Skyrmions in this phase. We have imaged the magnetic domain structure in a single crystal of Co ₃ Sn ₂ S ₂ at different temperatures, magnetic fields and field-angles by magnetic force microscopy. At low temperatures, we observed stripe domains indicating presence of uniaxial anisotropy. Above 130 K, the domain walls become mobile and they tend to align relatively easily when the magnetic field is increased along the c-axis than in the a-b plane. Our detailed study of field-dependent domain evolution reveal that the anomalous phase below T _c through which the transition happens is most probably governed by domain wall motion.
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