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A mean-field study of the Hubbard model on the anisotropic kagomé lattice MATTHEW ENJALRAN, Southern Connecticut State University — The study of material and model systems with the kagomé lattice structure has been an active area in the field of frustrated magnetism for decades. Formed from a 2D network of corner sharing triangles, the kagomé lattice can be realized as well separated planes in materials with large moments (jarosites, S=5/2) and quantum spins (herbertsmithite, S=1/2) or as a derived lattice structure, for example in pyrochlore spin ice materials in the presence of a external field along the [111] crystallographic direction. Numerous magnetic model Hamiltonians have been applied to the kagomé lattice and studied via a range of theoretical and numerical techniques. Much has been learned about new phases of matter from these works, and interest in these systems continues to grow. However, comparatively less is known about the possible low temperature phases of correlated electrons on the kagomé lattice. Hence, we study the single band Hubbard model on the kagomé lattice using mean-field theory. We allow for anisotropic hopping in order to study the effects of variable frustration on the low temperature phases of the model and for comparison to materials with distorted kagomé structures. We present preliminary results from our work.

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