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**Going beyond mean-field theory for frustrated magnetism with extended Thouless-Anderson-Palmer method** MATTHEW ENJALRAN, Southern Connecticut State University — Mean-field theories (MFT) enjoy wide use in physics and are particularly helpful in the study of magnetism. Mean-field theories provide physically acceptable results to a wide range of model systems, including frustrated models, where other more exact methods experience problems. The major draw back to MFT is that fluctuations are ignored over all length scales. The consequence of this extreme constraint is that the results, although physically acceptable, can vary between being qualitatively and quantitatively correct to being qualitatively and quantitatively incorrect and any combination in between when compared to exact results or experimental data. A systematic approach to extend MFT beyond the Gaussian limit is provided by the extended Thouless-Anderson-Palmer (eTAP) method as developed by A. Georges and J. S. Yeddeia. We present a brief description of the eTAP method applied to spin models and itinerant systems and discuss preliminary applications to models of frustrated magnetism.

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