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*Convex analysis for quantum resource theories*

The study of quantum resource theories encompasses many physical properties of quantum systems that can be viewed as resources and that can be used and manipulated within certain restrictions. In studying any resource theory, one aims to find useful resource measures and other conditions that can be used to express when conversions between resources is possible within the framework. Since many resource theories arising in quantum information (such as those of quantum entanglement and coherence) exhibit convex structure that can be exploited in developing a mathematical framework for understanding, tools from convex analysis can be applied to aid in our understanding. Here we investigate some techniques using convex optimization theory that can be applied to convex resource theories, and provide explicit examples to certain resource theories such as that of entanglement.