

MAR15-2014-001222

Abstract for an Invited Paper  
for the MAR15 Meeting of  
the American Physical Society

### **Quantum Quantum-Thermodynamics**

TERENCE RUDOLPH, Imperial College London

The thermodynamic implications of quantization of energy were realized before the full quantum theory was developed, and today its effects are very well (though perhaps not completely) understood. By contrast the thermodynamic implications of quantum coherence, in the myriad guises it can arise, are still encountered in a somewhat piecemeal fashion and are lacking a (coherent!) unified and completely general framework. I will discuss some attempts to provide such a framework using tools of quantum information theory and to explain how thermodynamical constraints on the manipulation of quantum coherence arise.