# Thermofields for Quantum Thermodynamics

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Thermofields provide a neat and simple way to evaluate thermal averages and to introduce finite-temperature environments. The idea was developed, initially, for finite temperature field theory [1,2] but has subsequently found application in quantum optics [3,4] and in the study of quantum gasses [5]. The essential idea is to replace thermal density operators with pure states in a doubled Hilbert space; a technique later rediscovered by the Quantum Information community who named this process 'purification' [6]. In this talk I shall introduce the basic techniques for using thermofields and, if time allows, give some simple examples of the utility of the technique.

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